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THE CAUSES OF BLINDNESS IN CHILDREN

THEIR RELATION TO PREVENTIVE OPHTHALMOLOGY

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A study of 2,702 children in schools for the blind in the school year 1933-1934 disclosed certain facts concerning the causes of blindness and the possibilities for preventive work that made it seem desirable to direct the attention of ophthalmologists to the eye conditions incident in the younger age groups. This paper is presented in the hope that the dissemination of the information secured may make it possible to obtain more reliable data which will stimulate medical research and programs for the prevention of blindness.

Reliable information on causes of blindness has been lacking. Even when detailed studies have been made they have been limited to a comparatively small number of patients or to a restricted geographic area, so that they could not be considered representative; and because the methods and classifications used lacked uniformity, the results of these studies could neither be compared nor totaled scientifically.

Recognizing this difficulty, the Committee on Statistics of the Blind [1] set up a standard classification of causes of blindness [2] which could be applied to any group and which would make possible uniform statistics for the entire country. This classification was prepared with the advice and cooperation of a number of ophthalmologists, and in 1934 the Section on Ophthalmology of the American Medical Association designated a committee (under the chairmanship of Dr. T. B. Holloway) to serve in an advisory capacity to the Committee on Statistics of the Blind.

METHOD OF STUDY

In the academic year 1933-1934, at the invitation of a group of schools for the blind,[3] the Committee on Statistics of the Blind made a study of causes of blindness among pupils in these schools. Eighteen residential schools and the public school braille classes of two cities were included, a total of 2,702 children. Since this number represents nearly half the children registered in schools for the blind, and since the institutions studied were widely scattered geographically, this group may be considered representative of the country as a whole.

The examining ophthalmologist was asked to record his observations on a special report form (fig. 1). This form does not require a detailed record of a complete ophthalmologic examination but only the minimum of medical data, in summary form, that is considered essential for the intelligent solution of problems relating to the child's education, vocational guidance and medical care, as well as for statistical purposes. Especial attention is called to the heading "diagnosis," with its three subdivisions (1) eye condition primarily responsible for blindness, (2) secondary conditions, if any, and (3) etiologic factor responsible for the primary eye condition.

THE IMPORTANCE OF ETIOLOGY

Etiology is stressed as a separate question because experience has shown that the ophthalmologist tends to record his diagnosis in terms of the nature and location

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The members of the Committee on Statistics of the Blind acknowledge with grateful appreciation the valuable assistance they have received from ophthalmologists throughout the country, both in constructive criticism during the development of these classifications and in cooperation during the studies made in the schools for the blind.

1. The Committee on Statistics of the Blind, sponsored jointly by the American Foundation for the Blind and the National Society for the Prevention of Blindness, was appointed in 1930 to act as a coordinating body, whose chief functions are to develop standard methods for recording and summarizing information adaptable to statistical treatment and to act as a central agency for the collection, analysis and distribution of these data. The members of the committee are Conrad Berens, M.D., ophthalmic surgeon, New York Eye and Ear Infirmary; Lewis H. Carris, managing director, National Society for the Prevention of Blindness; Ralph C. Hurlin, Ph.D., chairman, director, Department of Statistics, Russell Sage Foundation; Robert B. Irwin, executive director, American Foundation for the Blind; C. Edith Kerby, statistician, National Society for the Prevention of Blindness; Evelyn C. McKay, research agent, American Foundation for the Blind; Bennet Mead, statistician, United States Department of Justice; B. Franklin Royer, M.D.; Stetson K. Ryan, executive secretary, Connecticut Board of Education of the Blind

2. The standard blanks and classifications mentioned in this paper may be obtained without charge from the secretary of the Committee on Statistics of the Blind, 15 West Sixteenth Street, New York.

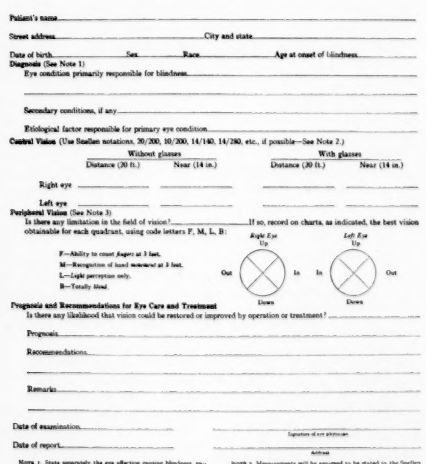
3. List of schools and classes for the blind included in study on causes of blindness for the school year 1933-1934:

Name of School	Examining Ophthalmologist
Alabama School for the Blind	Dr. Joseph Brown (OALR)
Alabama School for the Negro Deaf and Blind	Dr. Joseph Brown (OALR)
Illinois School for the Blind	Dr. A. L. Adams (Oph)
Louisiana State School for the Blind, white	Dr. Rufus Jackson (OALR)
Maryland School for the Blind	Dr. L. J. Goldbach (Oph)
Maryland School for the Blind (Department Colored Blind and Deaf)	Dr. L. J. Goldbach (Oph)
Perkins Institution and Massachusetts School for the Blind	Dr. Harold B. Chandler (Oph) Dr. Trygve Gundersen (Oph)
Minnesota School for the Blind	Dr. Douglas Wood (OALR) Dr. J. H. Gammell (OALR)
Mississippi School for the Blind, white	Dr. M. L. Batson (Oph)
Missouri School for the Blind	Dr. Harvey D. Lamb (Oph)
New York State School for the Blind	Dr. H. H. Glosser (Oph)
New York Institute for the Education of the Blind	Dr. Bernard Samuels (Oph)
North Carolina State School for the Blind and Deaf	Dr. V. M. Hicks (Oph)
North Carolina State School for the Blind and Deaf, Colored Dept.	Dr. V. M. Hicks (Oph)
Ohio State School for the Blind	Dr. Albert D. Frost (Oph)
Pennsylvania Institution for the Instruction of the Blind	Dr. Thomas B. Holloway (Oph)
Tennessee School for the Blind, white	Dr. Bruce P'Pool (OALR)
Wisconsin School for the Blind	Dr. Benjamin I. Brindley (OALR)
Chicago Day School Classes for the Blind	.....
Cleveland Day School Classes for the Blind	Dr. S. H. Monson (OALR)

of the eye lesion. This is true even when he has diagnosed the underlying etiologic factor and has prescribed treatment for it.

From the point of view of social programs, etiologic information is of paramount importance, particularly to those social workers interested in the prevention of blindness. They can grasp its significance more readily and use it in the education of the public. Gradually the majority of ophthalmologists are also placing more emphasis on this part of the diagnosis.

Our experience in obtaining etiologic data on 2,702 children has convinced us that this is not a simple procedure for the ophthalmologist. However, since the summarized data can be no better than the source material from which they are obtained, examining ophthalmologists are urged to give special attention to etiologic information. Since the school ophthalmologist must make his examinations at a time far removed from the occurrence of blindness, all known facts about the case should be assembled for his consideration. The assistance of a public health nurse or medical social worker in making necessary investigations would be valuable. A complete summary of information concerning each case should be placed on file either in the state commission for the blind or (if there is no state commission) in the department of health. If this were done at the time of onset of blindness, the reports



PHYSICIAN'S REPORT ON EYE EXAMINATION

Patient's name

Street address City and state

Date of birth Sex Race Age at onset of blindness

Diagnosis (See Note 1)

Eye condition primarily responsible for blindness

Secondary conditions, if any

Etiological factor responsible for primary eye condition

Central Vision (Use Snellen notations, 20/200, 10/200, 14/140, 14/280, etc., if possible—See Note 2.)

	Without glasses		With glasses	
	Distance (20 ft.)	Near (14 in.)	Distance (20 ft.)	Near (14 in.)
Right eye				
Left eye				

Peripheral Vision (See Note 3)

Is there any limitation in the field of vision? If so, record on charts, as indicated, the best vision obtainable for each quadrant, using code letters F, M, L, B:

F—Ability to count fingers at 3 feet.
M—Recognition of hand movement at 3 feet.
L—Light perception only.
B—Totally blind.

Right Eye: Up, Out, In, Down
Left Eye: Up, In, Out, Down

Prognosis and Recommendations for Eye Care and Treatment

Is there any likelihood that vision could be restored or improved by operation or treatment?

Prognosis

Recommendations

Remarks

Date of examination Signature of eye physician

Date of report Address

NOTE 1. State separately the eye affection causing blindness, secondary or contributing conditions, and the underlying etiological factor which is responsible for the primary eye affection. Examples: Optic atrophy—postmeningitis; optic atrophy—glaucoma; optic atrophy—tuberculous; gonorrheal; keratoiritis—congenital syphilitic infection; cataract—diabetes; retinitis pigmentosa—hereditary; iridocyclitis, secondary cataract—focal sepsis. In traumatic cases, describe circumstances of accident fully; if industrial accident, give nature of industry. If primary eye condition or etiological factor is not the same for both eyes, divide the space and indicate each separately.

NOTE 2. Measurements will be assumed to be stated in the Snellen formula (either feet or inches) unless otherwise noted. If exact measurements of central vision cannot be given, describe the best vision as near as possible to the distance and the size of the test object. Examples: Counting fingers at 3 feet; hand movement at 3 feet; light perception only.

NOTE 3. Tests should be made with patient facing one eye on a point 3 feet straight ahead and with objects held at a distance of 3 feet from the fixation point in the quadrant of the field under examination, the other eye to be kept closed or covered.

Please use reverse side for recording re-examinations, operations, treatment, etc.

Form prepared by the Committee on Statistics of the Blind, Office of the Secretary, 15 West 16th Street, New York

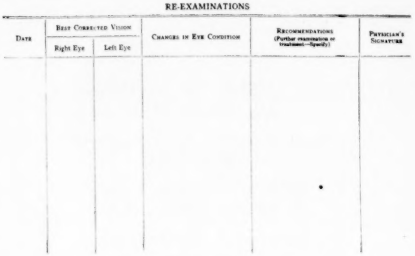
C.S.B.—15-4-35-10, 150

Fig. 1.—Physician's report form on eye examination.

would serve also as an indication of the trend of blindness. At the present time it is impossible to determine whether blindness is increasing or decreasing.

Age Group.—The age group studied (table 1) is comparable to that usually found in elementary and secondary schools, except that there may be a larger percentage of pupils 20 years of age and over. Since this study is confined to children, only the conditions that occur in this age group will be found. However, in presenting statistics on the causes of blindness, the committee's complete scheme of classification has been used in order to make it available to those who are not familiar with it.

Classification by Amount of Vision Remaining.—Classification by the amount of vision remaining



RE-EXAMINATIONS

Date	Best Corrected Vision		Changes in Eye Condition	Recommendations (Further examination or treatment—Specify)	Physician's Signature
	Right Eye	Left Eye			

Fig. 2.—Report form for reexaminations.

(table 2) is of special interest to ophthalmologists. Cases were grouped according to visual acuity in the better eye (with correction, when lenses were worn).

Obviously, the nature of the statistical observations on the causes of blindness is greatly affected by the individual definitions of the term "blindness," and at the present time no uniform definition of "blindness" could be found on which ophthalmologists and workers for the blind throughout the country would agree. Therefore "the blind" were divided into groups on the basis of visual acuity, those differences in degrees of vision being selected which seem to determine the type of work the individual is able to do. The five groupings range from 20/200 (Snellen) to "total blindness or light perception only."

The outstanding feature of this study is the fact that, even though the upper limit of the original classification —group 5, "borderline cases"—was set at 20/200, 12.6 per cent of pupils in these schools had better vision. Approximately 4 per cent of the total number of pupils had better vision than 20/70, which is usually designated as the maximum vision for sight-saving class pupils. We realize that there are many eye conditions in which central visual acuity is not a true measure of the extent of the visual handicap. This explanation, however, does not account for all cases which present only moderate or slight visual handicap. In fact, many of these children should not attend a school for the blind. Educators are of the opinion that the partially seeing group should not be institutionalized unless their educational needs can be met in no other way. The schools that are giving sight-saving class instruction (rather than braille or tactual training) to pupils with moderate visual handicap have taken a step in the right direction. However, among the eighteen institutions studied there are only two schools that have sight-saving classes.

The presence in institutions for the blind of large numbers of children having some vision suggests that ophthalmologists should be consulted in adjusting the environmental conditions and teaching methods to safeguard the remaining vision. The problem of accurate classification by amount of vision remaining is compli-

cated by the mental condition of many of these children. Holloway [4] reports that 43.7 per cent of the pupils at the Overbrook School for the Blind fall into the group of the dull, backward or feebleminded.

CLASSIFICATION BY CAUSE [5]

Data on the causes of blindness are presented according to an etiologic and a topographic classification. The plan is similar to that of the Standard Classified Nomenclature of Disease,[6] but the lists of the Committee on Statistics of the Blind include only conditions that may lead to blindness.

Etiologic Classification.—In this classification (table 3) the causes are grouped under six main headings: (1) infectious diseases, (2) traumatic and chemical injuries, (3) toxic poisoning, (4) neoplasms, (5) noninfectious systemic diseases, and (6) congenital and hereditary. Under each heading the individual items represent the causes that occur most frequently, but there are two general items to cover other specified cases of the same nature and those cases belonging in the group but not specified. The inclusion of the latter type of item under each heading makes it possible to reduce the miscellaneous "unknown" group ("etiology not specified") to a minimum.

The congenital and hereditary group accounts for more than half the cases of blindness among children (51.1 per cent). This group is subdivided into two parts. In one part are the hereditary and familial cases (11.6 per cent) in which have been included all those specified as hereditary by the examiner and also those specified as "congenital" but suspected of being hereditary because of the presence in the same school of sisters or brothers with the same eye condition. It seems quite probable that, if family histories of all cases in the congenital group could have been studied, the percentage transferred to "hereditary" would be markedly increased. The "prenatal" cases should also be investigated for evidences of underlying etiologic factors. Routine Wassermann tests, which are not now required in many schools for the blind, would aid the ophthalmologist in making diagnoses of prenatal syphilis and would undoubtedly result in classifying many more cases under the "infectious disease" heading.

The number classified as "congenital and hereditary" indicates that these are the cases most in need of attention from the standpoint of prevention. A more intensive study of this group, in order to obtain a maximum of information on the etiologic factors involved, seems to be a necessity.

"Infectious diseases" constitute the next largest group (28.6 per cent of the total cases), with ophthalmia neonatorum (10.7 per cent) and syphilis (5.3 per cent) heading the list of specified diseases. We believe that the syphilis figure is greatly understated. Probably some cases of syphilis are concealed in "congenital and hereditary" and "infectious diseases, not specified." More complete data may be obtained on this important point if ophthalmologists will cooperate by giving accurate and detailed information for every case examined.

TABLE 1.—*Age Distribution*

Present Age (as of 6/1/34)	Total Pupils	Per Cent of Total
All ages	2,702	100.0
Under 5 years	3	0.1
5 to 9 years	356	13.2
10 to 14 years	954	35.3
15 to 19 years	934	34.6
20 years and over	394	14.6
Age not reported	61	2.2

TABLE 2.—*Distribution by Amount of Vision Remaining*

	Number	Per Cent
Total 20 schools and classes reporting	2,702	100.0
Group 1 (total blindness, or light perception only, [less than 2/200])	1,003	37.1
Group 2 (2/200 but not 5/200)	430	15.9
Group 3 (5/200 but not 10/200)	366	13.6
Group 4 (10/200 but not 20/200)	258	9.6
Group 5 (20/200) "borderline" cases	226	8.3
Better than 20/200 through 20/70	240	8.9
Better than 20/70	100	3.7
Not reporting vision remaining	79	2.9

TABLE 3.—*Causes of Blindness: Classification by Etiologic Cause*

Cause of Blindness	Number	Per Cent
Infectious diseases	**772**	**28.6**
Diphtheria	3	0.1
Gonorrhea (excluding ophthalmia neonatorum)	6	0.2
Measles	24	0.9
Meningitis	55	2.0
Ophthalmia neonatorum		
Gonorrheal	82	3.0
Other types, specified	—	—
Not specified	208	7.7
Scarlet fever	6	0.2
Septicemia	16	0.6
Smallpox	3	0.1
Syphilis		
Prenatal	126	4.7
Acquired	—	—
Origin not specified	15	0.6
Trachoma	13	0.5
Tuberculosis	13	0.5
Typhoid	1	0.1
Other infections, specified	30	1.1
Infections, not specified	171	6.3
Traumatic and chemical injuries	**211**	**7.8**
Nonindustrial injuries		
War	—	—
Explosives		
Fireworks	4	0.2
Firearms	19	0.7
Other explosives, specified	28	1.0
Explosives, not specified	—	—
Play or sport	68	2.5
Household activities	4	0.2
Street and traffic accidents	10	0.3
Injuries incidental to surgery	1	0.05
Birth injuries	4	0.2
Other nonindustrial injuries, specified	30	1.1
Nonindustrial injuries, not specified	22	0.8
Industrial injuries and diseases		
Trauma (including burns) specified	1	0.05
Industrial disease (including poison)	—	—
Industrial injury, not specified	—	—
Injuries, not specified	20	0.7
Toxic poisoning (excluding industrial)	**2**	**0.1**
Tobacco	—	—
Alcohol (ethyl, grain)	—	—
Alcohol (methyl, wood, denatured)	1	0.05
Other toxic poison, not specified	1	0.05
Neoplasms	**58**	**2.2**
Noninfectious systemic diseases	**33**	**1.2**
Anemia and other blood diseases	—	—
Diabetes	—	—
Nephritis and other kidney diseases	1	0.1
Vascular diseases	—	—
Noninfectious diseases, central nervous system	14	0.5
Diseases of pregnancy and childbirth	—	—
Other systemic diseases, specified	13	0.4
Systemic diseases, not specified	5	0.2
Congenital and hereditary	**1,382**	**51.1**
Prenatal	1,067	39.5
Hereditary and familial	315	11.6
Etiology not specified	**244**	**9.0**
Unknown to science	4	0.1
Undetermined by physician	186	6.9
Not specified	54	2.0
Total—All causes	**2,702**	**100.0**

4. Holloway, T. B.: The New Statistics on Causes of Blindness Among Children, Sight-Saving Rev. 5:13 (March) 1935.

5. The relative proportions of the various causes here discussed are typical only of the younger age groups.

6. A Standard Classified Nomenclature of Disease, Compiled by the National Conference on Nomenclature of Disease, New York, the Commonwealth Fund, 1933.

The relation of syphilis to blindness is a subject of which all too little is known. Keyes [7] stated that a "weighted average of prevalence in the United States based on a compilation of existing material, with due emphasis given to race, social and economic status, and geographical location, would strike a figure somewhere around 5 per cent as the average prevalence of syphilis in the United States at the present time." Jeans and Cooke [8] state that the incidence of congenital syphilis among children (under 14 years) is 2 per cent. From studies of the incidence of syphilis in the general population and of syphilis in children it is our belief that, if the Wassermann test were used more as a routine and adequate treatment were given to syphilitic persons, much unnecessary blindness could be prevented.

TABLE 4.—*Causes of Blindness: Classification by Topographic Cause*

Cause of Blindness	Number	Per Cent
Eyeball	**838**	**31.0**
Hypertension (glaucoma)	4	0.2
Refractive errors		
Myopia	93	3.4
Other refractive errors, specified	51	1.9
Refractive errors, not specified	1	0.1
Motor anomalies		
Amblyopia ex anopsia (squint)	9	0.3
Other motor anomalies, specified	—	—
Motor anomalies, not specified	—	—
Developmental anomalies and degenerative changes		
Albinism	63	2.3
Anophthalmos (excluding surgical)	9	0.3
Megalophthalmos	175	6.5
Microphthalmos	77	2.8
Aniridia	25	0.9
Disorganized eyeball	234	8.7
Other developmental and degenerative changes, specified	73	2.7
Developmental and degenerative changes, not specified	3	0.1
Panophthalmitis and endophthalmitis	21	0.8
Other disorders of eyeball, specified	—	—
Disorders of eyeball, not specified	—	—
Conjunctiva	**0**	**0.0**
Conjunctivitis	—	—
Other disorders of conjunctiva, specified	—	—
Disorders of conjunctiva, not specified	—	—
Cornea	**389**	**14.4**
Interstitial keratitis	65	2.4
Keratoconjunctivitis, phlyctenular	12	0.4
Keratitis, not specified	14	0.5
Ulcerative keratitis	277	10.3
Other disorders of cornea, specified	21	0.8
Disorders of cornea, not specified		
Iris and ciliary body	**60**	**2.2**
Iridocyclitis	53	1.9
Iritis	7	0.3
Other disorders of iris and ciliary, specified	—	—
Disorders of iris and ciliary, not specified	—	—
Crystalline lens	**461**	**17.1**
Lens opacity (cataract)	423	15.7
Dislocated lens	37	1.4
Other disorders of lens, specified	—	—
Disorders of lens, not specified	—	—
Choroid and retina	**390**	**14.4**
Choroiditis	50	1.8
Uveitis	90	3.3
Retinitis	10	0.4
Disseminated chorioretinitis	138	5.1
Detached retina	9	0.3
Retinal hemorrhage	1	0.1
Retinal degeneration	81	3.0
Obstruction of central artery or vein	—	—
Other disorders of choroid and retina, specified	11	0.4
Disorders of choroid and retina, not specified	—	—
Optic nerve	**453**	**16.7**
Optic atrophy	381	14.0
Optic neuritis	25	0.9
Neuroretinitis	41	1.5
Other disorders of optic nerve, specified	4	0.2
Disorders of optic nerve, not specified	2	0.1
Vitreous humor	**6**	**0.3**
Intra-ocular hemorrhage	2	0.1
Opacities	3	0.1
Other disorders of vitreous humor, specified	1	0.1
Miscellaneous and ill defined	**105**	**3.9**
Amblyopia, undefined	41	1.5
Other ill defined lesions, specified		
Lesions, not specified	64	2.4
Total—All causes	**2,702**	**100.0**

That blindness still results from ophthalmia neonatorum is deplorable. Although silver nitrate is apparently an excellent preventive, the problem of prevention should go further back than this. The proper preparation of the birth canal should receive greater consideration and the treatment of gonorrhea [9] in clinics must be improved. Education in regard to prevention of gonorrhea and the universal use of prophylactic stations are other factors of great importance.

Special mention should be made of the subdivisions appearing under ophthalmia neonatorum (table 3). Our committee wished to obtain statistics for the gonorrheal cases as differentiated from the nongonorrheal cases, but this proved to be impracticable. In the first place, the examiners reported "not specified" in seven of every ten cases, and, from the fact that some examiners reported all their cases as gonorrheal, it is possible that their figures represent their opinion that only the gonorrheal type leads to blindness. Definite information on some of the cases might be obtained by referring to hospital and board of health records.

"Traumatic and chemical injuries" rank third on the list of etiologic causes (7.8 per cent of the total cases). Perhaps the percentage was so small because of the fact that, when the ophthalmologist could not determine the etiology in cases of enucleation and the like, he preferred to classify them as "unspecified" rather than to accept the parent's claim of accident.

"Neoplasms" (2.2 per cent), "noninfectious systemic diseases" (1.2 per cent) and "toxic poisoning" (0.1 per cent) are together responsible for only a small proportion of the total cases. This small percentage is due to the fact that only the younger age groups were included in the results. It should be mentioned also that in 9 per cent of the total cases etiology was "not specified." More intensive investigation into available records would reduce the number of these cases, but this group should be eliminated finally by more adequate primary recording.

Topographic Classification.—For the topographic classification (table 4) the parts of the eye have been used as the eight main headings: (1) eyeball, (2) conjunctiva, (3) cornea, (4) iris and ciliary body, (5) crystalline lens, (6) choroid and retina, (7) optic nerve and (8) vitreous humor. Separate headings are available for types of disorders of the eye occurring frequently enough to warrant them, and at the end of each group have been inserted the items "other affections specified" and "affections . . . not specified."

Disorders involving the entire eyeball constitute the largest group of topographic causes (31 per cent). These are largely the developmental anomalies; e. g., megalophthalmos, microphthalmos, albinism, and the refractive errors. An analysis of this group by etiologic factor indicates that seven of ten of the disorders of the eyeball are "congenital and hereditary" cases; the remainder were due chiefly to "infectious diseases" and to "traumatic and chemical injuries."

Disorders of the lens (cataract 15.7 per cent and dislocated lens 1.4 per cent) comprise the next largest group. These also are almost entirely included in the "congenital and hereditary" group. Only primary cataracts were considered congenital. However, it is possible that some of the cataracts diagnosed as primary are really secondary to uveitis and other inflammatory

7. Keyes, E. L.: The Present Status of Venereal Disease Prophylaxis—Social and Medical, J. Soc. Hyg. **19**: 1 (Jan.) 1933.

8. Jeans, P. C., and Cooke, J. V.: Prepubescent Syphilis, New York, D. Appleton & Co., 1930, p. 94.

9. Goldberg, J. A.: Personal communication to the authors, March 26, 1935.

conditions but could not be so diagnosed because of the lapse of time between the onset of the condition and the examination. This study of the ophthalmologist's recommendations and prognosis indicates that operations for cataract as well as for other conditions have not been carried out in many cases. Even when the visual acuity obtained is disappointing (as it sometimes is in spite of apparently good surgical results), it must be remembered that the smallest improvement in vision is of great value to these blind children. Many of the schools, however, have neither the facilities for surgery and treatments nor adequate procedure to bring the physician's recommendations to the attention of welfare agencies that can arrange for the necessary service. In some cases ophthalmologists are undertaking the corrective work voluntarily, although they are handicapped by lack of funds for providing necessary lenses and also by the lack of proper personnel to do follow-up work in the homes. This is another function which the nurse or social worker could perform.

The "optic nerve" group is next in order of frequency (16.7 per cent). The etiology in these cases is divided as follows: 42 per cent "congenital and hereditary," 27 per cent "infectious diseases," principally syphilis and meningitis, 9 per cent "neoplasms," 5 per cent "traumatic and chemical injuries," 2 per cent "noninfectious systemic diseases," and the remainder not specified. It is probable that some of the cases reported as "optic atrophy" represent the terminal stage of some other eye diseases and should be classified under other headings.

Among the causes affecting the cornea, which include 14.4 per cent of the total cases, ulcerative keratitis appears most often. About two thirds of these cases are due to ophthalmia neonatorum. Interstitial keratitis, amounting to 2.4 per cent of the total cases, is described in most cases as syphilitic in origin.

Diseases of the choroid and retina account for 14.4 per cent of the cases; one third of these were only indefinitely classified as to etiology. They were ascribed to "infectious diseases, not specified" or to "undetermined by physician." The Wassermann reaction is a fairly accurate guide in syphilis, but available tests for the diagnosis of other infections have much less diagnostic importance. This is the reason why focal infection is ignored in one country and tuberculosis is considered the commonest cause of chronic infections, whereas in other countries the emphasis is reversed. Neither opinion has much scientific, bacteriologic or pathologic foundation. Therefore each is essentially a clinical conception. Certain serobacteriologic tests [10] and inoculation of animals may finally furnish more conclusive information.[11]

Another third were classified as "congenital and hereditary" and the remainder were due principally to specified infectious diseases and trauma. The other groups are not large enough to call for special analysis.

From this analysis it is evident that the assembling of sound and consistent statistical information on the causes of blindness in children may have considerable significance in shaping a program of preventive ophthalmology, in illustrating the effectiveness of preventive methods used, and for teaching purposes.

10. Berens, Conrad; Connolly, P. T., and Chapman, G. H.: Focal Infection in Diseases of the Eye: I. Report of Certain Laboratory Examinations, Tr. Internat. Cong. Ophth., Madrid **1**: 247, 1933.
11. Rosenow, E. C., and Nickell, A. C.: Elective Localization in Determining the Etiology of Chronic Uveitis, Am. J. Ophth. **15**: 1 (Jan.) 1932. Brown, A. L.: Chronic Uveitis: Bacteriologic and Immunologic Considerations, Tr. Sect. Ophth., A. M. A., 1934, p. 111.

CONCLUSIONS

1. More ophthalmologic service is required for children in schools for the blind if much blindness is to be prevented and many children are to be removed from the blind group and placed in the seeing and partially seeing classifications. This service should include provision for corrective operations and treatment as well as for examinations. It is important to remember that a large proportion of this group are wards of the state and that, once removed from their home communities, they are usually out of reach of medical service other than the facilities which the institution provides. If improved eye service were available, more accurate etiologic information could be obtained for classifying the cases, on which effective work for the prevention of blindness must be based.

2. If blindness is to be prevented, it seems desirable to make available to the schools the services of a public health nurse or medical social worker with a good knowledge of eye conditions, to supplement the work of the physician. Such a worker could make contacts with parents to obtain their cooperation in necessary treatments; for example, operations and antisyphilitic treatments. She would be in a position also to do preventive work in the homes in which syphilis or hereditary factors are problems.

3. Although ophthalmia neonatorum accounts for only 10.7 per cent of the blindness in the group studied, continued effort should be made to reduce the number of cases of blindness and visual defects arising from this disease. Until a drug has been proved more effective than silver nitrate, its use as a prophylactic should be required. If blindness from this preventable disease is to be decreased, education must be continued in regard to the proper care of the birth canal, the need for improvement in the treatment of gonorrhea in clinics, and the use of prophylactic stations. More careful bacteriologic technic and complete records are needed before the rôle of the gonococcus, as compared with other bacteria in the cause of ophthalmia neonatorum, can be properly evaluated and adequate preventive measures instituted.

4. Since the hereditary and congenital group apparently accounts for more than 50 per cent of the blindness in these schools for the blind, and since some of this is undoubtedly due to syphilis, it is imperative that the methods of preventing syphilis be improved. More accurate knowledge of the etiologic factors underlying these ocular defects need to be secured before adequate preventive measures can be successfully applied. It seems evident that syphilis plays a larger part in the etiology of these conditions than these statistics indicate.

5. Because syphilis heads the list of specified diseases and accounts for 5.3 per cent of blindness in these schools for the blind and is probably also responsible for a large proportion of blindness now classified as "congenital" or "hereditary," better methods of preventing and treating syphilis must be insisted on. The antepartum care of syphilitic mothers, better treatment of syphilitic diseases in syphilis clinics, eye clinics and hospitals, and better organized social service and follow-up work will aid greatly in reducing the number of children who may become blind from this cause. In addition to searching for eye diseases attributable to syphilis and preventing blindness as a result of this disease, every ophthalmologist should work for a comprehensive plan in each state for the prevention and treatment of syphilis and the education of the public regarding this disease.

6. Diseases of the choroid and retina are responsible for the visual impairment of 14.4 per cent of the children in these schools for the blind. This group includes disseminated chorioretinitis, choroiditis, uveitis and several other conditions that could be classified only indefinitely as to etiology. Excluding the traumatic cases and those due to known infections, it is evident that this group will require much fundamental research before the etiology can be stated specifically and blindness prevented by direct attack on the underlying cause. The Wassermann reaction is a fairly accurate guide in syphilis, but no equally valuable tests are available in the study of tuberculosis and focal infections.

7. Although the percentage of blindness (7.8) attributable to traumatic and chemical injuries is comparatively small among the children studied, the presence of this cause indicates that educational efforts and the improvement of safety devices should be continued.

8. Because the visual acuity in this group was better than 20/200 in 12.6 per cent of the pupils and was above 20/70 in nearly 4 per cent, ophthalmologists should insist that more attention be paid to educational opportunities. Sight-saving classes should be available for children whose visual defects are not serious enough to justify education by tactual methods but who cannot be safely or profitably educated in the regular public school classes.

These statistics on the causes of blindness in schools for the blind in the United States are probably better than those obtained previously. However, this study clearly indicates the need for the cooperation of ophthalmologists and all concerned with eye diseases and blindness in obtaining more reliable statistical information, especially in regard to exact etiology. We believe that members of the Section on Ophthalmology of the American Medical Association will continue to cooperate as they have in the past.

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ABSTRACT OF DISCUSSION

DR. ALBERT D. FROST, Columbus, Ohio: The work done by the committee has accomplished a great purpose, for it has brought to the attention of the profession fairly accurate statistics and will do much to stimulate prevention work. The etiologic classification is of the greatest importance and has shown clearly where the prevention program should be concentrated. However, the accurate etiologic factors are the most difficult to obtain with the present methods, as little or no history is obtainable when the child enters the school for the blind. If it were possible to require that all cases of blindness at the onset be reportable to the state boards of health a great step forward would be made. It is during the preschool period that much valuable time is lost from the standpoint both of treatment and of prevention. Ophthalmia neonatorum is fairly well under control, but as a consequence of time consuming red tape necessary to obtain treatment, many eyes are lost. In Ohio there is an emergency fund to provide necessary treatment to avoid lost time while responsibility is being established. Congenital and hereditary diseases could all be decreased in numbers materially by a concerted personal campaign of education in afflicted families. It is through ignorance that many of these families continue to bring blind children into the world, often against their will. One of the greatest obstacles in prevention is the unscrupulous optometrist who deliberately discourages his patient from consulting an ophthalmologist. It seems that nothing can legally be done about it, but in Ohio we have had some cooperation with the state board of optometry in at least bringing censorship on their own offenders. Unfortunately, the state medical boards have no authority to prosecute this form of malpractice. Snellen measurements should not be the sole method of classification, as many children with corrected vision of less than 20/200 are able to read ordinary print, and, if made to read braille, do so with their eyes. These cases should be placed according to the judgment of the school ophthalmologist. I have never observed any harm done to vision by allowing them to attend sight-saving classes. Uniform case records must be made before accurate statistics can be compiled. The standard form recommended by the committee seems adequate in that it emphasizes the etiologic diagnosis, which is of much greater importance in any prevention program. This form should be universally adopted so that the next census will be as accurate as possible.

DR. S. W. NEWMAYER, Philadelphia: As an ophthalmologist in charge of sight-saving classes of Philadelphia, I thought that there would be a few facts which may be of interest along this line. We have a school population of 275,000 children, and we have 190 children in sight-saving classes. Of these 190 children, fifty-eight have a vision of 15/200 or less, and thirty-one of the fifty-eight have a vision of 5/200 or less, and, as can readily be seen, these are potential cases of blindness or many of them are institutional cases. In Philadelphia, we etiologically group their cases into three groups: (1) congenital and hereditary, similar to Dr. Berens, but we exclude from this those with myopia; (2) acquired systemic diseases, and (3) ametropia with degenerative changes. Among these 190 cases, fifty-six are due to congenital diseases, twenty-four of which were diagnosed congenital amaurosis. Twelve of these twenty-four patients have a vision of 15/200 or less. There were fifty-seven cases of acquired systemic diseases and seventy-six cases of ametropia with degenerative changes. There were in class 1 and 2, out of a total of 113 patients, fifty-three with a vision of 15/200 or less, and of the fifty-three, the majority of them, to my mind, are institutional cases, as we have thirty-one of them with 5/200 vision or less. Valuable statistics and measures for prevention of blindness may be obtained through studies of large groups of school children, especially in large cities. With reference to the eye examinations in schools and corrective operations and treatments, allow me to call attention to the fact that in the state of Pennsylvania there are legal obstacles that forbid the use of any educational appropriations for any such use. The most effective preventive work is within the power of practicing physicians. School doctors and nurses can only recommend consultation with physicians; and they dare not in their work forbid a parent from taking a child for an eye examination or consulting with opticians, optometrists and others. More than 50 per cent of our patients who are recommended for treatment refuse such recommendations. We cannot force it on them. More than 50 per cent of those who do seek consultations go to other than recognized physicians.

DR. T. B. HOLLOWAY, Philadelphia: While one of the chief purposes of this paper is to stimulate effort to secure honest and reliable statistics concerning the etiologic factors that have to do with blindness, it also serves the purpose of illustrating the fact that much relative relief can be given to many who are included within the group regarded as blind, as this pertains to schools for the blind. How splendid it would be if those who seem so vitally interested in preventing the deaths and economic ills that result from war would devote some of their interest to preventing the same disasters that result from the shot and shell of civilization, namely, syphilis and gonorrhea; and this pertains to our various types of government, lay organizations, and individuals. Seventy per cent of the 2,700 students under consideration were from 10 to 20 years of age, and it is surprising to note that 12.6 per cent of the whole student body had better vision than 6/60 or 20/200. When possible, this is the group that should be given the advantage of sight-saving methods. Children with better vision than 20/200 do not belong in schools for the blind. In certain localities and certain states there are readily understood reasons why these schools might be appropriate; for example, Arizona, Idaho, New Mexico, Utah and Wyoming have a population about equal to that of Philadelphia. But there are still other states that are proud of their school systems, but they fail to realize the importance of providing the best means for these physically handicapped children to "carry on" in the great industry of youth. As to the advantages of a social worker affiliated with a school for the blind, to me there is no question about the

advisability of such a step. I believe that in the more densely populated states there are enough mentally handicapped blind children to be brought together in one state school. I believe that the average person would be surprised to see the incidence of 51.1 per cent for the congenital and hereditary conditions. While our statistics are not yet assembled, I feel quite certain that the incidence for this group has increased at Overbrook during the last twenty-five years. We do not have sufficient knowledge to judge just how many of these cases are preventable. We do know that certain disorders occur repeatedly and frequently in certain families and that the children ultimately become wards of the state or of some philanthropic institution, to say nothing of receiving a pension for life later on. At Overbrook it costs about $950 a year to educate a blind child. Compare that to the cost to the state or a municipality for educating a normal child.

DR. HARRY S. GRADLE, Chicago: According to the latest United States census there are 64,500 known blind persons. That figure is undoubtedly too low; it probably is somewhere between 80,000 and 90,000. The classification of the census is far from complete, more than 20 per cent of cases being of unknown cause. A short time ago I estimated that in the light of present knowledge practically 70 per cent of the blindness in the United States today is unnecessary and could be prevented and eliminated in the course of the next generation. It is rather up to this section to take the lead in that type of work. Dr. Berens spoke of the schools. Some two years ago four of us made a survey of the Illinois State School for the Blind. We found that, of the 246 pupils, 24 per cent were there unnecessarily, their vision being of such a quality that they could continue their education in the seeing world, and that another 25 per cent could be restored to the seeing world by surgical remedial measures. In the last two years we have tried to carry out these remedial measures. As a result, we have decreased the population of the Illinois School for the Blind by about 40 per cent. To take up the space that was left there, the state government gave us authority to introduce two sight-saving classes, available only to children who live in communities that have no sight-saving classes of their own. These are brought in, and, although the expense of conducting these classes is greater than the expense of similar classes in the city, still it puts within the range of those who are not so situated the advantages of this education. The difference in cost is great. It costs in Illinois, I think, about $960 a year to educate a blind child, whereas the cost of education of a normal child is around $45 a year. Consequently, in going over the schools for the blind in the various states, one should keep in mind the possibilities of reducing the population. But the prevention of blindness in the children is only a small phase of the work of prevention of blindness throughout the country; by far the majority of cases are in adult life, and greater attention must be devoted not only to the prevention but to the remedying of blindness before we can really hold up our heads as a forward-looking nation.

DR. E. V. L. BROWN, Chicago: I wish to speak from an educational and ophthalmologic point of view regarding the possible use of smaller print for sight-saving class work than the large 24 point now in use, and to urge a trial of a smaller size of type; namely, 18 point. The 24 point type measures about three-sixteenths inch in height and the 18 point is definitely smaller. In my opinion pupils with stationary conditions such as scarred corneas, aphakia and optic nerve atrophy cannot possibly be harmed by the most strenuous use of their eyes, any more than can one hurt a scarred hand by using it. Meissner has reported on the use, by twenty-two pupils, of ordinary print through five school years. Many of these pupils had less than 0.1 vision. I have translated and published this report and would be glad to send it to any one interested.

MR. LESLIE PATON, London, D. 1, England: I wish to stress the necessity for cooperation between all the national societies of the blind. We had a meeting a few weeks ago in London, attended by Mr. Carris, Dr. Park Lewis and representatives from different national societies all over the world. I happen to be a member of the National Society for the Prevention of Blindness in London, financed by the Cloth Workers Company and by the National Institute for the Blind. All together, I have had a good deal to do in recent years with this question of the prevention of blindness. I think that it was Dr. Gradle who said that the number of blind that had to be dealt with in this country was 65,000. We have a very much smaller population in Great Britain, but we already have registered papers from 66,000. These haven't all been investigated; myself and my colleagues have gone through about 5,000 of them and we have the prospect of the remaining 60,000 to investigate. I am afraid we shall have to issue a preliminary report before we finish. I think that the reason of the difference in the numbers may be due to the fact that we have a blind pension scheme in Great Britain, and every registered blind person gets, I think, ten shillings a week. I don't think you have a similar scheme. Have you? Possibly that is a very natural explanation for the difference between the two numbers. Priestley Smith and I were the originators of the definition which secures admission to that blind pension scheme, and it was an extraordinarily difficult thing to devise a practical definition. It wasn't any good saying that a person has one eye 6/60 and the other 6/30, because some of these might get on very well, and others with much better central vision but a limited field would be much worse off than these people with good fields and 6/36. So many different factors enter into the determination of the visual efficiency of the individual that any numerical definition becomes unfair. Consequently, the definition that we ultimately adopted was "too blind to be able to perform work for which eyesight is usually essential." It leaves us a fairly wide scope. Of course, it does sometimes come to putting down the eyesight in terms of visual acuity, but it allows a freedom of choice which is not given by any other method of definition, and it has worked fairly well on the whole.

MR. LEWIS H. CARRIS, New York: I merely want to express the appreciation of the National Society for the Prevention of Blindness to the members of this section for the fine cooperation which you have given to the Committee on Statistics of the Blind in assembling these data. We do not feel that the eyes of children with congenital anomalies can be harmed by the reading of small print; but we always say that, if limitations are to be put on the use of the eyes, this should be decided in individual cases by the attending ophthalmologist. In connection with Dr. Gradle's discussion, it is my understanding that the Census Bureau will omit all statistics on causes of blindness from any future census, leaving this field of activity to the Committee on Statistics of the Blind. The committee is a joint effort of the American Foundation for the Blind and the National Society for the Prevention of Blindness, but it is independent of both organizations. If any of you have not had the publications of this committee, we shall be glad to send them to you on request. It has been my opportunity in the last few years to visit many parts of the United States and to cooperate with ophthalmologists and state health boards. May I express on behalf of the national society our appreciation for the uniform courtesy which you have always extended to the members of our staff on our visits to you in your offices.

DR. TRYGVE GUNDERSEN, Boston: As a field worker in one of the large schools for the blind in this country I should like to point out a few of the points that come up in the course of the year's work. I began at Perkins Institution one year ago. The first thing that confronted me was that I was completely unable to get an ocular history from the patient. This difficulty has been largely overcome with the help of a well trained medical social worker and furthermore by incorporating in each application blank questions that will furnish better ocular histories in the future. One large group of patients that I immediately encountered consisted of those who had entered this institution with a diagnosis of congenital amblyopia. I found that a small number of these patients had completely normal fundi, but on examining their histories I made the interesting observation that birth injuries and convulsions were associated with a great many. I believe that this immediately takes these cases out of the classification of hereditary blindness and puts them into the classification of birth injuries. The remainder of this large group were found to have retinitis pigmentosa, when the fundi were more carefully examined after mydriasis. At the onset of this work I expected that one large branch of the service would be devoted to restoration of vision and the other to conservation of vision. I found that the work

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consisted practically of the latter only. By more careful examination of the patients I believe that the number of operations performed for glaucoma has been increased at least 100 per cent.

DR. V. M. HICKS, Raleigh, N. C.: For fourteen years I have been ophthalmologist for the North Carolina schools for the blind. We all recognize that, from a financial standpoint, our states are responsible in this problem. However, active interest in the problem from a scientific standpoint has been definitely lacking. A few connected with the schools have shown interest, but the profession as a whole has shown the interest of the lay person. It is our duty as ophthalmologists to sponsor in an active way the problem that confronts these children. Schools for the blind sponsored and maintained by the states should be the active workhouse for this problem. More than education of blind children is needed. In North Carolina, in addition to the school, we have developed our hospital and have a medical and surgical staff connected with the institution. Also, we have a gymnasium and swimming pool and other facilities that have been practical in developing these children. I think that it is imperative that this work be centralized, that it be compulsory and that it be actively supported by us in our interests and by the states with their money. Our school is a part of the public school system in North Carolina. Work in an institutional way should frequently be begun before the age of 6 if blindness is to be prevented. Congenital blindness can be solved when enough information is at hand to give positive advice as to the best way out. In our schools in North Carolina more than one third of the population are children whose parents, either one or both, attended a similar institution. These parents do not want to give birth to blind children, but they have not had any advice, and it is natural to find from three to ten children coming into our institution from a mother who was educated there and married for her rightful companionship. Therefore, I believe that it is the duty of this section, and the duty of the specialty of ophthalmology, to give to the states positive information as to what should be done, and I am satisfied that they will act accordingly.

DR. CONRAD BERENS, New York: It is possible that more cases are studied in England than here. However, we have decided to begin with a smaller select group before investigating the larger field. Mr. Paton speaks of having found 65,000 blind persons in Great Britain. Dr. Gradle quoted the census figures showing approximately the same number in the United States. I believe census counts are generally incomplete and that there are actually about 120,000 since the ratio is approximately one blind person in a thousand of the population. Mr. Paton also spoke of the question of pensions for the blind. We have a similar pension system in a few of our states. Dr. Holloway mentioned the importance of sight-saving classes. In the schools for the blind included in our study, there are only two of these classes. Certainly more of them are needed in the schools, or, preferably, the partially seeing children in the schools should be referred to outside classes. In a study of the subject last winter, Hathaway and I concluded that the need for many more of these sight-saving classes was imperative. Dr. Hicks was too modest to say anything of the splendid work he has done. I know that he has been able to help a great many children in his school. Some of these should not have been admitted; some should have been operated on before, and some have been given proper lenses or other appropriate treatment. Dr. Frost spoke of the need for an emergency fund to provide treatment for ophthalmia neonatorum cases while the responsibility for their care is being determined. Such a fund has been established in the state of New York. Dr. Newmayer mentioned the sight-saving classes in the schools and the fact that more than 50 per cent of the children for whom treatment was recommended received no medical care or care administered by nonmedical persons. It is unfortunate that we cannot prevent treatment by nonmedical persons of certain pupils who require scientific care. I do believe, as Dr. Brown does, that possibly in some cases children could be permitted to read smaller print. However, we need the active cooperation of ophthalmologists in every case in which special exceptions are made, and this is sometimes difficult to obtain. This is due to lack of interest at times. As Dr. Hicks has said, ophthalmologists should consider these schools as workhouses, not just as places to observe interesting blind people.

SUSCEPTIBILITY AND IMMUNITY

IN RELATION TO VACCINATION IN ACUTE ANTERIOR POLIOMYELITIS

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Is it worth while to attempt vaccination against acute anterior poliomyelitis in view of the low attack rate of the disease? If so, what are the prospects of success attending such efforts since the disease is evidently caused by a virus probably multiplying on or in the susceptible anterior horn cells of the spinal cord and causing the pronounced signs of disease only when coming in contact with such cells? Is it likely that antibody produced in human beings by vaccine of spinal cords of monkeys infected with remote passage virus will protect against the disease? If this appears possible, how should the vaccine be prepared? And if it is found possible to vaccinate human beings safely and effectively against poliomyelitis with such vaccine, how should the method be applied as a practical procedure? These and additional problems of related interest are briefly discussed herewith as the basis of my efforts to evolve a safe and effective method of active immunization against the disease.

IMMUNITY IN VIRUS DISEASES IN RELATION TO VACCINATION AGAINST POLIOMYELITIS

In the first place, the fact that an attack of acute anterior poliomyelitis almost invariably results in a lasting immunity against the disease constitutes the main reason for believing and hoping that it may be possible to vaccinate against it safely and effectively. Quigley [1] has recently collected but fourteen cases of second attacks from the literature, of which he believes that eleven appear reasonably definite and he added one case of his own. This indicates that the virus is capable of engendering an active and lasting immunity in human beings, which has been substantiated by the finding of specific neutralizing antibody in the blood of the majority of recovered individuals as well as by the demonstration of acquired immunity in monkeys recovering from the disease produced by intranasal or intracerebral inoculations of virus.

Indeed, it would appear that the majority of diseases caused by viruses are followed by lasting immunity as, for example, in smallpox, chickenpox, rabies, measles, mumps and yellow fever among human beings, and cattle plague, swine fever and dog distemper among the lower animals. Furthermore, it would appear that the majority of viruses are peculiarly capable immunizing agents not only during an attack of disease but likewise when administered as vaccines, as indicated by the success attending vaccination against smallpox and rabies as well as against dog distemper, cattle plague, African horse sickness, fowlpox, yellow fever and psittacosis. Since acute anterior poliomyelitis is regarded as a virus disease, all this lends great encouragement to efforts for evolving a safe and efficient method for vaccination against it.

From the Research Institute of Cutaneous Medicine and the Department of Medicine of Temple University.
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Owing to lack of space, this article has been abbreviated as it appears here. The complete article will appear in the author's reprints. A copy of the latter will be sent by the author on receipt of a stamped addressed envelop.

1. Quigley, T. B.: Second Attack of Poliomyelitis, J. A. M. A. **102**: 752 (March 10) 1934.

INCIDENCE AND SUSCEPTIBILITY IN RELATION TO VACCINATION AGAINST POLIOMYELITIS

Further impetus to such efforts is given not only because the disease is known to be world wide in distribution but likewise because the mortality has varied from 7.3 to as much as 43 per cent in different epidemics, with as high as from 25 to 45 per cent of residual or permanent paralysis among those fortunate enough to survive. Indeed, there are but few diseases capable of creating as much fear among physicians and the public alike as an epidemic of acute anterior poliomyelitis not only because of the death rate but likewise because of the crippling that may follow an attack of the disease.

Unfortunately, our information on how the virus is spread and epidemics produced is still inadequate; but it would appear, as stated by Flexner,[2] that it is largely distributed by carriers and that the portal of entry is the upper respiratory tract. Toomey [3] has recently renewed interest in the possibility of the gastro-intestinal tract being a portal of entry and in Sicard's thought that the virus may be absorbed by the gray fibers of the intestine and conducted by way of the sympathetic nerves to the spinal cord. For my own part, however, I have not yet succeeded in producing the disease in Macacus rhesus monkeys by feeding the virus, nor have Miss Rule and I been able to vaccinate monkeys by this route of administration.[4]

The majority of new-born infants appear to possess a natural and temporary immunity to the virus, as indicated not only by the low attack rate in infants under 1 year of age (3.5 per cent in the 1916 New York City epidemic) but likewise because Aycock and Kramer [5] found that the serums of 83 per cent of umbilical cord specimens of blood contained neutralizing antibody for the virus presumably passively transferred from the mothers. However, as shown in table 1, this passive immunity appears to be of short duration as the results of neutralization tests with the serums of twenty-nine children under 4 years of age have shown that from 58.3 to 100 per cent (average, 79.2 per cent) did not contain appreciable amounts of antibody in the blood and on the basis of these serum neutralization tests were to be regarded as susceptible to infection. In our own tests with the serums of nine children under 4 years of age 77.7 per cent failed to neutralize passage virus and thereby proved susceptible.

Among 159 children from 5 to 14 years of age the percentage of serums failing to neutralize virus has varied according to different investigators from 17 per cent to 100 per cent (average, 45.5 per cent). As Aycock and Kramer have shown, the percentage is always higher among children reared in urban than in rural districts. In our own series of twenty children included in this age group, all being reared in Philadelphia, the serums of 40 per cent gave negative monkey neutralization tests and were presumably susceptible.

Among 128 individuals over 15 years of age the percentage of serums failing to neutralize virus and thereby presumably indicating susceptibility has varied from 11.1 to 60, according to different investigators, with a general average of 24.7 per cent. As in the case of children, Aycock and Kramer have found the highest percentage of susceptibles in the rural districts; but in general terms it would appear that from 60 to 70 per cent of adults have neutralizing antibody in the blood presumably sufficient for conferring some resistance to infection.

Under the circumstances it must be admitted that, except for new-born infants, a large percentage of children are susceptible to poliomyelitis, especially those under 10 years of age, and that the low attack rate among them under "normal" conditions is not due so much to the presence of immunity as to factors influencing the virulence and dissemination of the virus over which we have at present little control and concerning which our information is even less satisfactory. Certainly no community, in the United States at least, can feel secure against the disease; and since the percentage of susceptible children is always high, the attack rate, mortality and residual paralysis can always be expected to increase sharply in the presence of factors increasing the virulence of virus or whatever it is that produces epidemics of the disease. Under these circumstances and because our information on the epidemiology of the disease is still incomplete, coupled with the knowledge that it is known to strike the lowly and well-to-do alike under most unusual conditions despite even rigid precautions against infection, I believe that there is a place of real value for the vaccination of children if a safe and practical method is available for producing sufficient immunity to tide them over to maturity, even though we omit adults on the basis that from 60 to 70 per cent may have lived long enough to acquire resistance to the disease.

THE NATURE OF IMMUNITY IN POLIOMYELITIS IN RELATION TO VACCINATION

As first shown by Netter and Levaditi [6] in 1910, the serums of individuals recovering from poliomyelitis contain the antibody capable of neutralizing in vitro monkey passage virus and since that time have become the best known antibody identified with the disease.

But it is a mistake to assume that this humoral antibody occurs in all persons who have recovered, so far at least as the neutralization of monkey passage virus is concerned. I have summarized the results reported by various investigators in table 2, in which it will be noted that from 12.1 to as high as 63.6 per cent (average, 34.9 per cent) of the serums of 126 individuals recovering from poliomyelitis failed to neutralize the virus in vitro, presumably because the antibody was absent or present in insufficient amounts. It is for this reason that several investigators have cautioned against the assumption that the serums of all convalescents and patients who have recovered are fit for the serum prophylaxis or treatment of the disease.

And yet, as previously stated, the immunity following an attack is quite solid, since second attacks are so rare. It is therefore suggested that there is probably an important cellular or tissue immunity in many individuals who have recovered who do not show demonstrable amounts of antibody in their serum.

Therefore, since it is possible for the serums of patients who have recovered to give negative monkey neutralization tests, despite the evidence for the existence of immunity, I was well prepared to observe that the serums of some children vaccinated by my method failed to develop this type of antibody and indeed this

2. Flexner, Simon: Libman Anniversary Volume **1**: 425, 1932.
3. Toomey, J. A.: The Intestinal and Urinary Bladder in Poliomyelitis, Am. J. Dis. Child. **45**: 1211 (June) 1933; An Enterodepressant Factor in the Stools and Spinal Cords of Monkeys Infected with Poliomyelitis, ibid. **48**: 30 (July) 1934.
4. Kolmer, F. A., and Rule, Anna M.: J. Immunology **26**: 505 (June) 1934.
5. Aycock, W. L., and Kramer, S. D.: J. Exper. Med. **52**: 457 (Oct.) 1930.
6. Netter, A., and Levaditi, C.: Compt. rend. Soc. de biol. **58**: 617, 855, 1910. Romer, P.: Die epidemische Kinderlähmung, Berlin, Julius Springer, 1911.

happened in four children of the original group.[7] Whether these chidren have a tissue immunity or are susceptible still remains to be seen. On the other hand, the presence of the antibody is widely accepted as indicative of immunity and I do not know of any individual carrying antibody in the blood who has contracted poliomyelitis. The nature of this assumed tissue immunity is unknown but it has occurred to me that the body cells may be "tuned up" for the rapid production of antibody when virus gains access to them and that in this manner they may escape infection. But since the attack rate is so sharply increased during epidemics, presumably because of greatly enhanced virulence of the virus, it seems to me highly desirable to vaccinate children under 12 years of age.

Suggestive of the existence of tissue immunity is the observation made during the past year by Miss Rule and myself that the serums of normal guinea-pigs and rabbits do not contain neutralizing antibody for our monkey passage virus, though as is well known these animals possess an absolute immunity to the virus. At least we have never been able to infect these animals by intracerebral inoculation,[8] and Harmon, Shaughnessy and Gordon[9] have had a similar experience with them as well as with young dogs, cats, mice, young hogs, lambs and calves. In this connection mention may also be made that in certain other virus diseases (dog distemper, fowl plague, fowlpox, African horse sickness, foot and mouth disease and horse encephalitis) various investigators have found neutralizing antibodies either absent or but irregularly present in the blood of natural hosts that have been recovered, even though these infections generally engender a high state of immunity.

Since, however, it appears that the presence of large amounts of neutralizing antibody in the blood is indicative of immunity even though its absence is not inconsistent with this state, one can only guess at its origin. Aycock and Kramer have long maintained that it develops because of a widespread distribution of the virus with a process of natural immunization as the result of single or repeated subclinical or unrecognized attacks. This has always impressed me as a very reasonable assumption and encourages one to seek an efficient method for vaccinating human beings. For if it is possible for immunity to be engendered by so light an infection, it ought to be possible to duplicate the results by vaccination.

Since tissue immunity apparently exerts an important rôle in resistance to and recovery from poliomyelitis, it is to be expected that various other theories of immunity to this disease would be entertained. In this connection Draper[10] has thought that a certain constitutional make-up of young children (broad brow and round face with wide space between the eyes, plumpness, separation of central incisor teeth with difficult dentition, and so on) indicated unusual susceptibility. Aycock also has observed that unusually well developed children, who are however of a more delicate make-up physically and temperamentally than normal children, may be more susceptible than usual. Indeed, Aycock[11] believes that some variation in the physiologic activity of the body may produce an increased resistance to poliomyelitis without outside assistance by way of unrecognized infection with virus, for which he has proposed the name "autarcesis"; Jungeblut and Engle[12] offer the suggestion that the mass protection enjoyed by the adult human population may rest primarily on the normal functions of the endocrine balance characteristic of mature age.

It is stated that old monkeys carefully guarded against chance exposure to the virus are more resistant than young animals (which our experience confirms) and it would appear that there is much that is not understood about this subject, so commonly discussed as "maturation immunity." The fact remains, however, that large numbers of young children, and adults as well, contract poliomyelitis every year and either die of the disease or recover with varying degrees of permanent crippling. A safe and efficient vaccine, therefore, is highly desirable, particularly for the period of childhood, until the natural agencies of resistance, whatever they may be, have been developed.

Certainly I cannot agree with those who believe that dependence can be placed on the processes of natural immunization or maturation alone in view of the low attack rate of acute poliomyelitis, because I believe that it may be possible to protect children safely and efficiently by vaccination over the period of their greatest susceptibility.

THE ANTIBODY FOR MONKEY PASSAGE VIRUS IN RELATION TO VACCINATION

But since the only practical source of vaccine for immunization against poliomyelitis is the spinal cords of monkeys infected with remote passage virus, there is at once the important question whether or not the antibody produced by such virus will aid in the protection of human beings against the disease. In other words, does the species of animal furnishing the vaccine alter it in such a way that the antibody produced may fail to protect human beings against poliomyelitis?

Of course it is irrefutably established that vaccine of the cowpox virus, which is presumably the smallpox virus passed through the skin of calves, will protect human beings against smallpox. Furthermore, it is definitely established that vaccines of rabies virus passed through the spinal cords of rabbits will temporarily immunize both human beings and dogs. It also appears that vaccines prepared from the brains of mice infected with the yellow fever virus immunize human beings against that disease, as shown by Hindle[13] and others. In addition, the successful vaccination of human beings by Rivers and Schwentker[14] with vaccines of the living virus of psittacosis, or parrot disease, prepared from the livers and spleens of infected mice, indicates that the passage of viruses through lower animals leaves their vaccines capable of engendering immunity in human beings. From these instances one might infer that vaccines of remote monkey passage poliomyelitis virus will immunize not only monkeys but human beings as well.

However, as shown by Paul and Trask,[15] the experimental disease produced in monkeys by two human strains of virus did not leave these animals on recovery immune to passage virus and in a few instances recovery from infection with passage virus left the animals susceptible to human virus. Furthermore, the antibody in some human convalescent serums for human virus

7. Howitt, Beatrice F.: J. Infect. Dis. **51**: 565 (Nov.-Dec.) 1932.
8. Kolmer, J. A., and Rule, Anna M.: Proc. Soc. Exper. Biol. & Med. **31**: 48 (Oct.) 1933.
9. Harmon, P. H.; Shaughnessy, H. J., and Gordon, F. B.: J. Prev. Med. **4**: 59, 89 (Jan.) 1930.
10. Draper, George: Am. J. M. Sc. **184**: 111 (July) 1932.
11. Aycock, W. L.: J. Prev. Med. **3**: 245 (May) 1929.
12. Jungeblut, C. W., and Engle, E. T.: Resistance to Poliomyelitis, J. A. M. A. **99**: 2091 (Dec. 17) 1932.
13. Hindle, E.: Brit. M. J. **1**: 976 (June 9) 1928.
14. Rivers, T. M., and Schwentker, F. F.: J. Exper. Med. **60**: 211 (Aug.) 1934.
15. Paul, J. R., and Trask, J. D.: J. Exper. Med. **58**: 513 (Nov.) 1933.

appeared to differ qualitatively for passage virus. Weyer[16] has found also that the serums of horses immunized with monkey passage virus was highly neutralizing for passage virus (1:500) but much less so for human virus (1:20). However, Howitt[17] and others have found that serums from horses, goats and sheep immunized over a long period of time with monkey passage virus have given some evidence of therapeutic value in a small group of human cases in the preparalytic stage of poliomyelitis, indicating that the antibody produced by passage virus is capable of neutralizing human virus. Furthermore, as shown by Flexner,[18] human convalescent serum neutralizes not only recent but also remote passage virus, thereby indicating that frequent passage of the virus through monkeys does not produce material alteration but also that monkeys vaccinated by remote passage virus develop immunity in part at least to recent human virus.

It would appear, therefore, that the weight of evidence available at present indicates that the antibody produced in human beings by a vaccine of remote monkey passage virus may aid in protection against the human disease, as it probably aids in the protection of monkeys themselves; but the final answer to this question of fundamental importance must await the results of vaccination of human beings and especially those exposed to epidemics of the disease. The vaccine should be highly successful, as Miss Rule and I have found that the serums of children immunized in Philadelphia by my attenuated vaccine of remote monkey passage virus (Rockefeller strain) have completely neutralized human spinal cord virus (Cuneo) sent me by Dr. J. F. Kessel from the 1934 epidemic in southern California as well as the virus in the third monkey passage from another fatal human case in the same epidemic, kindly furnished by Miss Beatrice Howitt of San Francisco. No one knows at present whether or not immunologically specific strains of poliomyelitis virus exist. If they do, the problem of vaccination would be greatly complicated in proportion to the number of strains, just as vaccination against the pneumococcus has been complicated by the known existence of so many different types.

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THE METHOD OF PREPARATION OF VACCINE IN RELATION TO IMMUNIZATION

If, therefore, encouragement exists for the immunization of human beings against poliomyelitis with vaccine of remote monkey passage virus, the question arises as to the best manner for preparing it of monkey spinal cord for the safe and effective vaccination of human beings.

As stated by Andrewes,[19] it would appear definitely established that vaccines of dead viruses are enormously weaker than living and attenuated viruses, because the former contain but small amounts of antigenic virus protein while the virus in the latter after injection can multiply perhaps a millionfold in the body and thereby have a far better chance of producing resistance. Furthermore, as recently stated by Rivers,[20] it would appear that the lasting immunity of virus diseases may be due to the prolonged or persistent sojourn of the viruses in hosts once infected; and if this is true of poliomyelitis, it is not at all likely that completely "killed" vaccines could produce a durable immunity in this disease.

While vaccines of various viruses apparently inactivated or killed by solution of formaldehyde, phenol, chloroform, ether, heat and other agents have been used with some success in vaccination against rabies, distemper, cattle plague and fowlpox, yet, as stated by Andrewes and more recently by Rivers, it is still an open question with at least some of these vaccines whether or not the viruses are really killed or only attenuated, because it is almost impossible at present to determine when a virus has been completely inactivated. In poliomyelitis of monkeys, at least, best results have been obtained with subcutaneous or intracutaneous injections of the living virus by Flexner and Lewis,[21] Aycock and Kagan,[22] Stewart and Rhoads,[23] Rhoads[24] and others or by mixtures of virus and immune serum given together or separately. Miss Rule and I were unable to vaccinate monkeys successfully with chloroform and heat inactivated vaccines[4] and for these reasons I have thought that best results in the immunization of human beings might probably be obtained, as they have in monkeys, with vaccines of living virus, provided a way could be found for safely attenuating the virus.

Of the several agents employed for the inactivation of virus in the preparation of poliomyelitis vaccine, solution of formaldehyde would appear to be of most interest, since it has been used with success in the preparation of diphtheria and tetanus toxoids and other vaccines. Apparently, however, one has to work within a fairly narrow range of concentration of the solution, as too much seems to destroy all antigenic power and too little will not completely inactivate. As stated by Andrewes, this is one of the facts which lead some to suspect that an effective vaccine may be not entirely "dead." However, it may be that a large dose of dead virus will immunize as effectively as a small dose of living but attenuated virus; but this is not at all likely. Further, Dunkin and Laidlaw[25] have shown that formaldehyde treated canine distemper virus produces only a fleeting immunity in dogs and that an active virus must be employed for obtaining a solid lasting immunity. As stated by Rivers, all the evidence at hand seems to indicate that whatever immunity is produced by inactivated viruses endures only for a relatively short time and that many workers do not seem to be disturbed by this fact, which is so important with vaccines expensive to make and difficult to administer. Furthermore, as suggested by Sabin,[26] the antigens engendering the production of neutralizing antibodies may not exist in the viruses but arise from the infected tissues, which, if true, would indicate the need of using active virus in vaccine.

ATTENUATION OF VIRUS

Believing therefore that effective vaccination against infantile paralysis required the administration of active virus, I became interested in the possibility of using living but attenuated remote monkey passage virus and in the course of some chemotherapeutic investigations[27]

16. Weyer, E. R.: Proc. Soc. Exper. Biol. & Med. **29:** 289 (Dec.) 1931.
17. Howitt, Beatrice: J. Infect. Dis. **50:** 26 (Jan.) 1932; Southwestern Med. **16:** 320 (Aug.) 1932.
18. Flexner, Simon: Immunity to Human and Passage Poliomyelitis Virus, J. A. M. A. **99:** 1244 (Oct. 8) 1932.
19. Andrewes, C. H.: Lancet **1:** 989 (May 2) 1046, (May 9) 1931.
20. Rivers, T. M.: Am. J. M. Sc. **190:** 435 (Oct.) 1935.
21. Flexner, Simon, and Lewis, P. A.: Experimental Poliomyelitis in Monkeys, J. A. M. A. **54:** 1780 (May 28) 1910.
22. Aycock, W. L., and Kagan, J. R.: J. Immunology **14:** 85 (Aug.) 1927.
23. Stewart, F. W., and Rhoads, C. P.: J. Exper. Med. **48:** 959 (June) 1929.
24. Rhoads, C. P.: J. Exper. Med. **51:** 1 (Jan.) 1930; **53:** 115 (Jan.) 1931.
25. Dunkin and Laidlaw, quoted by Rivers.[20]
26. Sabin, A. B.: Brit. J. Exper. Path. **16:** 84 (Feb.) 1935.
27. Kolmer, J. A.; Rule, Anna M., and Madden, Bernard: J. Lab. & Clin. Med. **19:** 972 (June) 1934.

with sodium ricinoleate, which possesses some detoxifying activity, I considered the possibility of this agent so attenuating the virus as to make it safe for subcutaneous injection, especially since McKinley and Larson [28] had already found that monkeys could be sometimes immunized by intraperitoneal injections of this type of vaccine.

Miss Rule and I [4] prepared a vaccine of a 1 per cent emulsion of monkey spinal cord in sterile water with sufficient sodium ricinoleate to give a 10 per cent concentration and in a series of six monkeys succeeded in vaccinating two successfully and one partially. Believing that better results could be obtained with vaccines carrying more tissue-virus and less sodium ricinoleate, we then prepared vaccines carrying 4 per cent of virus with 1 per cent sodium ricinoleate [29] and successfully vaccinated eighteen monkeys with subcutaneous and intracutaneous injections,[30] since all animals inoculated intracerebrally about one month later with about eighteen minimal infective doses of virus remained perfectly well, whereas the controls developed poliomyelitis in from five to nine days.

The virus in the vaccines, however, was not killed, since the injection of 0.3 cc. amounts into the brains of monkeys produced paralysis, but usually milder and with a somewhat longer incubation period, suggesting that the sodium ricinoleate may have produced some attenuation, although this is very difficult to determine in view of the varying susceptibility of monkeys to the virus.

But furthermore, and very importantly, the subcutaneous and intracutaneous injection into these eighteen monkeys of from five to ten doses of 0.05 to 1 cc. per kilogram and amounting to as much as a total of from 5 to 100 cc. for a child of 10 Kg. (about twenty-five pounds) were without any ill effects whatever aside from local irritation at the sites of injection, which I thought acceptable as possible further evidence of attenuation of the virus.[31]

Under these circumstances Miss Rule and I felt justified and safe in taking the vaccine ourselves in July 1934, even though we were without neutralizing antibody in the blood. We both took 0.5, 1.5 and 2 cc. at five-day intervals with no ill effects aside from local irritation at the sites of injection in the arms. Two weeks after the third dose we found our blood containing antibody, as determined by the serum neutralization tests with monkeys in which 0.2 cc. of serum mixed with 0.2 cc. of 5 per cent virus was injected intracerebrally after standing two hours at 37 C.

Furthermore, I was impressed with additional possible factors of safety; namely, the administration of a small first dose followed by two additional doses at weekly intervals, the rapidity with which antibody is apparently produced by this vaccine in both human beings [32] and monkeys,[33] and the subcutaneous route of administration, since it is difficult to infect monkeys by this route even though the virus has been well adapted to this animal.[34]

In addition I have thought that the remote monkey passage virus employed in the preparation of the vaccine may have lost to a large extent its virulence for human beings as a result of a very large number of passages through monkeys during the past many years after the manner of the loss of virulence of the smallpox virus by reason of passage through calves and other of the lower animals. Certainly it is difficult to infect monkeys with human spinal cord virus even by intracerebral inoculation, and ordinarily many passages are required before virus becomes highly virulent for these animals and I have thought that the reverse may be equally true.[35]

Under the circumstances I regarded the vaccine as so safe that I administered it to my two sons, aged 11 and 15 years respectively, the former being without neutralizing antibody in his blood. Since then Dr. Klugh, Miss Rule and I have given from one to three doses of the vaccine at weekly intervals by subcutaneous injection to a group of twenty-three additional children varying in age from 8 months to 11 years, at the request or with the consent of their parents, with absolutely no ill effects aside from occasional mild constitutional and local reactions at the sites of injection corresponding to those produced by diphtheria toxoid. All children were selected on the basis of preliminary monkey serum neutralization tests and the results, which are give elsewhere,[32] have shown antibody production in 84 per cent.

I believe, therefore, that sterile vaccine carrying 4 per cent of very finely divided remote monkey passage spinal cord virus is safe by subcutaneous injection for both monkeys and human beings after treatment with 50 per cent glycerol for one week and 1 per cent sodium ricinoleate and 1:80,000 phenyl mercury nitrate at 37 C. for twenty-four hours followed by from ten to fourteen days in a refrigerator at 12 to 16 C. It is likely that weak concentrations of solution of formaldehyde, phenol and other chemical agents may also attenuate the virus just as effectively as sodium ricinoleate.[36]

It is true that the three doses advised for human beings [32] are much less per kilogram of weight than found necessary for the effective immunization of monkeys, but it is a reasonable assumption that human beings will require much less protection than monkeys infected intracerebrally with ten or more minimal doses of virus or by repeated intranasal inoculations. Furthermore, the doses advised were decided on in the interests of safety until more data were available.

28. McKinley, J. C., and Larson, W. P.: Proc. Soc. Exper. Biol. & Med. **24**: 297 (Jan.) 1927.

29. The vaccine is now prepared with the addition of 1:80,000 phenyl mercury-nitrate to prevent accidental bacterial contamination during its preparation and administration, since 1 per cent sodium ricinoleate is very low in bacteriostatic and bactericidal activity. The brain and spinal cord of each monkey is also tested for the virus of lymphocytic choriomeningitis (Armstrong and Lillie) before the latter is used in the preparation of vaccine. The details of preparation are described by Kolmer, J. A., and Rule, Anna M.: An Improved Method for Preparing the Kolmer Poliomyelitis Vaccine, with a Note on Its Administration and Safety, J. Am. Pub. Health A., to be published.

30. Kolmer, J. A.: Am. J. M. Sc. **188**: 510 (Oct.) 1934.

31. Since then twenty-four additional monkeys have received five subcutaneous injections of the 4 per cent vaccine at five-day intervals in a dose of 0.5 cc. per kilogram without any evidences of poliomyelitis infection, whereas in a series of twenty monkeys receiving similar subcutaneous injections of the straight virus (five doses of 0.2 cc. of 10 per cent virus per kilogram) poliomyelitis developed in one, again suggesting that the virus had probably undergone some attenuation in the vaccine.

32. Kolmer, J. A.; Klugh, George, Jr., and Rule, Anna M.: A Successful Method for Vaccination Against Acute Anterior Poliomyelitis, J. A. M. A. **104**: 456 (Feb. 9) 1935.

33. Kolmer, J. A., and Rule, Anna M.: Am. J. Clin. Path. **5**: 349 (Sept.) 1935.

34. In this connection Dr. William H. Park has recently stated: "It is known that when intradermal or subcutaneous methods of injection are used, it is difficult to infect monkeys. There is every reason to believe that this is true of children." (From the "Crippled Child" **13**: 57, 1935.)

35. It would appear that Dr. Park also shares this opinion as recently stated: "It is also known that it is difficult to adapt the human virus of infantile paralysis to monkeys so that they will develop an attack. The reverse of this is probably true: that a virus adapted to infect monkeys has lost much of its virulence for man." (From the "Crippled Child.")

36. In this connection I may state, however, that the addition of 1:4,000 solution of formaldehyde to the vaccine has resulted in so much inactivation of virus that monkeys could not be immunized by five subcutaneous injections at five day intervals of doses varying from 0.05 to 0.5 cc. per kilogram; 1:100 phenol and 1:40,000 mercurophen also resulted in some inactivation, so that both were less vaccinogenic than the plain ricinoleated vaccine and that carrying 1:80,000 phenyl mercury nitrate (Kolmer and Rule, article mentioned in footnote 29).

Just how long the immunity lasts is impossible to state at present, except to mention that monkeys vaccinated about three years ago are still solidly immune to intracerebral injections of virus.[37] It is likely, however, that some of this resistance may be due to the increasing age of the animals (maturation immunity). Certainly it is reasonable to expect that the immunity engendered by attenuated virus will endure much longer than that produced by "dead" virus and I am hoping that future experience will show that it will suffice at least to protect the majority of children over their age of greatest susceptibility.

THE PRACTICAL APPLICATION OF VACCINATION AGAINST POLIOMYELITIS

But it may be argued that vaccination of young children may deprive them of the opportunity of natural immunization through acquiring subclinical or abortive attacks of the disease which Aycock and others believe are largely responsible for the immunity that is apparent in a large percentage of adults. This is probably based on the assumption that antibody produced by vaccine will prevent infection with virus and thereby prevent the latter from producing immunity. This may be true, but I myself do not care how children and adults as well acquire immunity as long as they safely do so in sufficient degree to protect them against the disease. Protection before natural immunization can occur and especially in times of epidemics seems a more important desideratum than a possible immunity obtained from a hypothetical abortive attack.

As previously stated, antibody production appears to be sufficiently prompt even after the first dose of vaccine to indicate that it may be safely used in epidemics.[38]

But, since the attack rate is so low in the absence of epidemics, should all children be vaccinated? Unfortunately, there does not exist at present a cheap and quick method for picking out susceptibles, the monkey serum neutralization test for antibody being the only one available. The colloidal gold test of Eberson as well as complement fixation, precipitin and skin tests conducted by Dr. Klugh, Miss Rule and myself have proved disappointing, as reported elsewhere.[39] Schultz, Clifton, Gebhardt and Chambers[40] had previously found the colloidal gold test of no value, as likewise skin reactions by Sabin, Park and Jungeblut.[41] It would appear that the monkey is the only animal known at present to be susceptible for antibody tests and it is too expensive for use on a large scale. Furthermore, the tests require from two to three weeks. Certainly such tests are not required in the case of children aged 4 years or younger, as enough have been done to show that about 80 per cent are susceptible, and even more in the rural districts.

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SUMMARY

1. Since acute anterior poliomyelitis is regarded as a virus disease and results in lasting immunity, second attacks being very rare, and since the majority of the viruses appear to be highly capable immunizing agents, great encouragement is given to efforts for producing a safe and effective method for the vaccination of human beings against the disease.

2. Further impetus to such efforts is given by reason of the fact that the mortality has varied from 7.3 per cent to as much as 43 per cent in different epidemics, with as high as from 25 to 45 per cent residual paralysis.

3. While the attack rate is low, except in epidemics, it would appear that the disease is of increasing frequency both as isolated cases and in epidemics.

4. While about 83 per cent of new-born infants have antibody in the blood temporarily, serum neutralization tests with the serums of twenty-nine children under 4 years of age, including nine of our own series, failed to neutralize the virus in about 79.2 per cent and were apparently susceptible.

5. Among 159 children from 5 to 14 years of age, including twenty of our own series, an average of 45.5 per cent were without neutralizing antibody.

6. Of 128 individuals over 15 years of age and largely composed of adults, the serums of 24.7 per cent failed to neutralize the virus.

7. Under these conditions it would appear highly probable that a large percentage of susceptibles are present in all communities, particularly in the case of children under 12 years of age, thus rendering a safe and effective method of vaccination highly desirable.

8. This need is emphasized also by reason of the fact that the passive immunity conferred by the injection of normal or convalescent serum is of very short duration.

9. From 12.1 to as high as 63.6 per cent (average 34.9 per cent) of the serums of 126 individuals recovering from poliomyelitis have failed to neutralize passage virus, presumably because neutralizing antibody was absent or was present in insufficient amounts. Therefore, not all convalescent serums are fit for prophylactic or therapeutic immunization.

10. While humoral and tissue immunity may be due to unrecognized and subclinical attacks of poliomyelitis, it has been suggested also that there may be a type of "maturation immunity" due to constitutional make-up or undetermined physiologic factors.

11. Even if the neutralizing antibody is due to subclinical or unrecognized attacks of the disease, the ease with which it is apparently produced suggests that vaccine may likewise produce it readily and in a large percentage of susceptible individuals.

12. The processes of natural immunization, whatever they may be, should not be regarded as sufficient, since so many and especially children contract the disease before immunization can develop and either succumb or recover badly crippled and handicapped for the remainder of life.

13. Since vaccines of other viruses prepared from the tissues of lower animals successfully immunize

37. In this connection I may state that the results of monkey serum neutralization tests with twenty-three of the original group of twenty-five children [39] conducted in August (one year after immunization) have shown the persistence of antibody. One child without antibody last year (tested one week after the third dose) was found to have a large amount of antibody this year.

38. But from the outset I have realized the possibility and probability of the vaccine being given during the incubation period too late to abort the disease and with the possbility of having the vaccine blamed for the attack. Since January of this year 446 individuals, 319 of whom were children from 6 months to 15 years of age, have received the usual three doses at weekly intervals in our clinic at Temple University Hospital with absolutely no ill effects aside from some local reactions. During this period the Research Institute of Cutaneous Medicine has distributed 12,812.5 cc. of the vaccine to 582 physicians in thirty-six states, mostly in the epidemic areas, and the William S. Merrell Company of Cincinnati has distributed an additional 8,910 cc. through 137 physicians. These amounts have been sufficient for the immunization of more than 10,000 individuals (mostly children). No one receiving the three doses has developed the disease nor have I any knowledge of the vaccine producing lymphocytic choriomeningitis or demyelinization encephalomeningitis. There have been, however, ten instances of poliomyelitis developing after one or two doses of the vaccine, the histories and a more complete analysis of data being given elsewhere (Kolmer, J. A.: Am. J. M. Sc., to be published), with the statement that at least some if not all of these appear reasonably certain to have been instances of giving vaccine during the incubation period too late to abort the disease.

39. Kolmer, J. A.; Klugh, George, Jr., and Rule, Anna M.: J. Immunol. **29**: 191, 199 (Sept.) 1935.

40. Schultz, E. W.; Clifton, C. E.; Gebhardt, L. P., and Chambers, J. V.: J. Immunol. **26**: 119 (Feb.) 1934.

41 Sabin, A. B.; Park, W. H., and Jungeblut, C. W.: Nature of Skin Reactions Produced by Heat-Inactivated Poliomyelitis Virus, Arch. Int. Med. **51**: 878 (June) 1933.

human beings, and since horses, goats and sheep immunized over long periods of time with monkey passage virus produce at least small amounts of antibody capable of neutralizing human virus, it would appear probable that vaccines of monkey passage poliomyelitis spinal cord would successfully vaccinate human beings.

14. The serums of children immunized in Philadelphia with my vaccine of monkey passage virus have neutralized human spinal cord virus from the 1934 epidemic in California, indicating that antibody produced by vaccine of passage virus is capable of neutralizing human virus.

15. It appears definitely established that vaccines of viruses killed by heat or chemical agents are generally much weaker immunizing agents than living or attenuated viruses.

16. It is possible, however, that large doses of "dead" virus may be slightly vaccinogenic, provided a method is found for concentrating the virus in order to reduce reactions from injections of spinal cord tissue and diminish the added burden placed on the antibody-producing tissues for protecting themselves against the tissue proteins.

17. Filtrates of my vaccine of living but attenuated virus are antigenic, but finely divided suspensions of cord tissue seem preferable, in order to secure the maximum of intracellular virus for immunization. The local reactions are slight and skin tests have shown that human beings have not acquired allergic sensitization to the small amounts of spinal cord protein contained in three doses.

18. Monkeys have been successfully vaccinated by subcutaneous and intracutaneous injections of virus or by mixtures of virus and immune serum; but these methods are considered too dangerous for the immunization of human beings.

19. We have succeeded in immunizing all of forty-two monkeys with a living but attenuated vaccine carrying 4 per cent emulsions of spinal cord in 1 per cent solutions of sodium ricinoleate with no evidences of ill effects aside from local reactions at the sites of injection. Three doses of the vaccine were then taken by Miss Rule and myself without ill effects and with good antibody response.

20. Three doses of the vaccine at weekly intervals were given, with the consent of parents, to twenty-five children varying in age from 8 months to 11 years (the majority of whom gave preliminary negative serum neutralization tests for antibody) with absolutely no ill effects and with antibody response in 84 per cent. (During the past ten months 446 additional individuals [mostly children] have been immunized at Temple University Hospital with no ill effects, as likewise about 10,000 additional in thirty-six different states mostly in epidemic areas. No person receiving the three doses has contracted the disease, but ten receiving one or two doses have done so; it would appear that the majority of these may have been instances of vaccine being given during the incubation period too late to abort the disease.)

21. Attenuation of the virus in the vaccine along with the fact that the first dose is quite small per body weight, with an interval of at least a week for antibody production before the second and third doses are given, appears to constitute important factors in safety.

22. Furthermore, it may be that the remote monkey passage virus used in the preparation of the vaccine is of greatly reduced infectivity for human beings and that subcutaneous injections represent a portal of entry unsuited to infection, since it is difficult to infect monkeys with the straight virus by this route.

23. In some instances, antibody sufficient for the neutralization of virus has been found in the blood of susceptible children as early as ninety-six hours after the first dose, and in monkeys even large doses per body weight do not appear to lower resistance temporarily by the production of a negative phase.

24. It is not yet possible to state the duration of immunity following vaccination, although monkeys vaccinated three years ago are still immune to intracerebral injections of virus. (Neutralizing antibody has been found to persist in the blood of children immunized one year ago.)

25. If the immunity lasts only a sufficient number of years to protect children over their age of greatest susceptibility until maturation immunity has developed, it would appear that vaccination may be very much worth while.

26. At the present time the monkey serum neutralization test is the only reliable one for the detection of humoral immunity. While it is too expensive for routine use on a large scale, it is available for those who can afford it and may be sufficiently reliable as a test for immunity. It is hardly necessary, however, in the case of children under 4 years of age, as about 80 per cent are susceptible.

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ABSTRACT OF DISCUSSION

DR. WILLIAM H. PARK, New York: Those of us who are interested in this work are watching with keen interest the vaccines prepared by Drs. Kolmer and Brodie. Both have promising possibilities. We know that the Semple vaccine against rabies is apparently a killed virus and is effective. The results of Dr. Kolmer are very similar to those that we have obtained, and it seems therefore that there are two vaccines which are probably both safe, and only time can tell which is the better. I think this generous rivalry between the two will be advantageous. Then, of course, there is Dr. Kramer's vaccine, in which the virus and the serum are mixed together in an adjusted mixture, which is neutralized not fully but sufficiently so as not to produce disease in those injected. I believe that by the end of this summer we shall know which of the first two is to be used, or whether both should be used. It may be that the dead vaccine is better adapted to be sent to a distance, although the live virus probably could be preserved in transit. I think it is a very interesting point Dr. Kolmer has brought out, that this virus, which is still quite virulent in monkeys, is apparently not virulent in children in the small doses advised.

DR. H. F. KRAMER, Brooklyn: I should like to ask Dr. Kolmer how far one can go with the neutralization test. It is a perfectly good test if too much is not asked of it. It has its limitations, decidedly. Then, what does the neutralization test mean when it is run? Does it give susceptibility? Does it tell whether the person is immune? It is not, so far as I know, a test of susceptibility. Another question on the neutralization test: Some of those figures that were on the screen indicate that a large proportion of people who have a disease have never developed immunity. The figures giving the highest percentage are the smallest figures. The test wasn't done very often. The rule is good solid immunity following disease. Sometimes one sees an individual who has failed to develop immunity, but that is extraordinarily rare.

DR. JOHN A. KOLMER, Philadelphia: The significance of antiviral antibody in relation to susceptibility and immunity in acute anterior poliomyelitis must be discussed with great care in view of the limited number of tests reported, because of the expense involved in using a monkey for each serum-neutralization test. For this reason it is highly desirable to discover some cheaper test for this antibody to facilitate inves-

tigation on a broader scale than is now possible. At this time, however, I believe that sufficient antibody in 0.5 cc. of serum capable of completely neutralizing at least ten minimal infective doses of virus in an exposure of two hours at 37 C. is indicative of sufficient resistance to protect the individual against acute anterior poliomyelitis. Effective resistance may be present, however, without demonstrable amounts of this antibody in the blood. This is suggested by the fact that individuals known to have had poliomyelitis are found without antibody in the blood, as shown in my second chart, and yet clinical experience indicates that they may be nevertheless highly immune, since second attacks are rare. I believe that a tissue immunity may be present with or without humoral immunity. For this reason I believe that the presence of large amounts of this antibody in the blood is indicative of immunity but that its absence does not necessarily indicate susceptibility.

THE MANAGEMENT OF RENAL TUMORS, INCLUDING CYSTS

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Malignant growths of the parenchyma of the kidney may be classified broadly, for purposes of management, as hypernephromas and carcinomas; they are seldom distinguishable from each other before operation. Hypernephromas have an irregular cellular structure and are radiosensitive, while carcinomas have a fairly typical microscopic arrangement and are apt to be radioresistant. Apart from their histologic structure, sarcomas and teratomas have practically the same characteristics as hypernephromas. Because of diagnostic difficulties, neoplasms of the kidney pelvis must be included here; they are squamous cell growths, similar in structure to those occurring in the bladder, are not sensitive to the roentgen ray and have just as indefinite an evolution as do vesical tumors.

Long and varied experience has shown that the only curative treatment for malignant neoplasms is removal of the affected kidney and its contained or attached growth, together with such neighboring tissues as may have been infiltrated by it. This has been so well and repeatedly demonstrated that in determining the management of a particular case it is necessary only to decide whether benign as well as malignant neoplasms should be given similar radical treatment, to cite what clinical circumstances contraindicate operation altogether and to give, in brief, the desiderata of the operation itself, together with preoperative and postoperative treatment.

Benign growths of the parenchyma are commonly recognized at necropsy. They are usually small and harmless or, if they do become large enough to produce clinical symptoms, have already caused enough change in the kidney to make them malignant by position if not by cellular structure and metastases. The uncertainty as to what the result may be if they are treated by simple excision and the fact that they cannot be readily submitted to the repeated minor attacks which may be required to eradicate them makes it necessary to treat them by nephrectomy. This is only another way of stating that any renal or pelvic neoplasm that can be recognized clinically should be considered as actually or potentially malignant and treated as such. Benign papillomas of the kidney pelvis might seem to be an exception to this rule, but the difficulty of locating all the growths that may be present in the finer ramifications of the calices, together with their tendency to recur or for similar growths to appear in new locations, makes it inadvisable to treat them by any more conservative means.

Apart from such self-evident circumstances as poor general condition and severe disease with poor function in the opposite kidney, which would naturally preclude successful nephrectomy, the surgeon confronted with a renal neoplasm must carefully consider whether the local conditions referable to the growth itself are such as to make the prospects for cure by operation sufficient to justify the risk that will be incurred in performing it. Failure to observe this can only lead to discredit both to the surgeon and to the operation. Improved mortality statistics will come from earlier diagnoses and earlier operations rather than from accepting hazardous operative risks. These, in turn, will depend on earlier, more searching and more persistent efforts to determine the cause for hematurias that are not characteristic. The presence of remote metastases, usually in the liver, lungs or bones, ordinarily contraindicate operation; but occasionally an exception may be made and nephrectomy done if hemorrhage is unusually great and not controlled by irradiation and perhaps too if renal pain cannot be otherwise controlled. This is to be done only in a patient whose general condition is exceptionally good despite the presence of the tumor and its local complication.

While no sharp lines can be drawn between the groups, patients with renal tumor may be conveniently arranged as to operability, on the basis of local data, into three classes; first, those that are definitely operable; second, borderline cases and, third, the definitely inoperable ones. The first of these includes patients presenting a small or moderate sized mass that is freely movable with respiration and on palpation. In these it is probable that the growth has not yet broken through its capsule and involved neighboring organs and that surgery may be undertaken with a reasonable chance of complete removal and thus of cure. In this category must be placed those patients whose only symptom is pain and whose only sign tumor, without either hematuria or pyelographic evidence. Such cases occur, as a rule, in children and adolescents and are rare but not unheard of in adults. In them only exploratory operation will disclose definitely the nature of the disease and whether it is operable or not.

To the borderline group belong patients whose tumors are fairly large, whether movable or not. Whether or not to attempt a nephrectomy in these cases will depend on the judgment of the surgeon in charge and in many instances, perhaps in the majority, the question can be settled only after exploratory incision has been made. In operating the surgeon should not hesitate to close the wound, without disturbing the growth, if conditions that will prevent its safe or complete removal are disclosed. It is good surgical judgment not to attempt removal at all in cases obviously inoperable, for severe hemorrhage or rupture of the capsule with dissemination of tumor tissue may be brought about even on slight manipulation. While successful cures occasionally occur after heroic operative procedures in which tumor masses are removed from the renal vein or vena cava, consideration is seldom given to other cases in which death occurs from immediate hemorrhage and shock or to instances in which the disease has been disseminated by ill advised and unsuccessful attempts at removal.

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To the third or inoperable group belong patients with tumors, either large or small, that are adherent and fixed and are not movable either with respiration or on palpation. These will probably be found to have broken through their capsule and to have infiltrated neighboring organs so extensively that their complete removal is impossible. The presence of engorged superficial trunk veins may further complicate the clinical picture and indicate obstruction of the vena cava either by pressure of the tumor on the outside of the vessel by glands or from extension into the lumen. In such instances, operation is useless and should not be done.

No more than the essentials of operative technic can be given here. The operation is seldom an easy one, the presence of an inaccessible vascular pedicle together with greatly enlarged veins over the surface of the exposed kidney and possible extension of the growth into the renal vein or vena cava or infiltration of nearby organs presenting difficulties that tax both the ingenuity and hardiness of the surgeon and the resistance of the patient. No simple rules can be given for handling them. Each will have to be cared for in a manner dependent on the circumstances under which they are encountered.

The lumbar approach may be used in small tumors in which the entire mass is not larger than that which would be considered readily operable by this route if the enlargement were due to some other cause. In larger growths and in any in which it is probable that prompt and accurate access to the vascular pedicle will be difficult or uncertain, an abdominal transperitoneal approach must be considered. This route has the undoubted advantage of securing the vascular pedicle before there is great need for manipulating the tumor itself. In this way a large part of the blood supply is controlled early and the closing of the main vascular trunks thus accomplished may prevent metastases by squeezing of tumor cells into the blood stream during removal of the tumor itself.[1] Since it has been shown that, in hypernephromas, islands of tumor tissues may be present in it remote from the growth, the perirenal fat should be removed with the tumor. Present practice does not favor removal of the adrenal gland unless it is involved in the growth.

In tumors primary in the pelvis, possible involvement of the ureter must be thought of and a complete or total ureterectomy done if it is found to be involved either before or during operation.[2]

In children the operation may be technically less difficult than in adults, but both the immediate and the remote mortality are considerably greater. The growths are usually proportionately larger, perhaps because the tumor itself is often the first and only symptom and the disease is not suspected until it is well advanced.

Preoperative irradiation induces fibrotic changes in cortical tumors and makes their removal less difficult.[3] Although the method has not been used long enough or on a sufficient number of patients to warrant definite conclusions as to its effects on the end results, reports are favorable and it is probable that the method will have a wide vogue, for the surgeon will quite properly favor anything that will diminish the hazards and difficulties encountered in operating for renal tumor. A disadvantage is that patients may consider that the growth has been completely destroyed by radiotherapy and thus postpone or refuse surgery. This view should be energetically combated; for, while irradiation may alter the tumor beneficially, it will not destroy it completely.[4] The irradiation requires three weeks, during which it is conceivable that metastases or extension may occur and this may militate against cure in the long run. Radiotherapy should certainly be used in cases classed as either borderline or inoperable in the hope that removal may be made easier or that otherwise hopeless cases may be brought within the possibility of surgical relief.

Postoperative irradiation to eliminate possible rests that have been overlooked or deliberately left behind seems to be indicated. Just how much should be given and where it should be applied is a problem to be worked out in conjunction with the radiotherapist. Radiation is not innocuous in itself [5] and to be of value must be administered by a thoroughly competent radiotherapist who has at his command apparatus adequate for the task in hand.

Inoperable cases, apart from indicated hygienic, dietetic and medical measures, should be treated by means of radiotherapy.[6] The majority of renal tumors are hypernephromas, and, since these are generally radiosensitive, an effort should be made to control metastases and recurrences with the roentgen ray. If used skilfully, they may limit the size of the growths or cause them to shrink and somewhat alleviate a hopeless condition.

POLYCYSTIC KIDNEY

In polycystic kidney the symptoms that attract attention to the disease are due either to hypertension or to uremia from progressive loss of kidney function, to the discovery of an abdominal mass or to some complication, usually infection, hemorrhage or stone. The disease is congenital, bilateral and progressive and accordingly the treatment must be carefully individualized to suit the particular case. It must be emphasized that a polycystic kidney should not be removed simply because of its polycystic condition.

Those patients in whom a palpable mass or nephritic or hypertensive manifestations predominate require symptomatic treatment, which is, as a rule, of a purely medical nature. Surgical treatment is required only if some complication develops, no operation having been devised that will influence the progressive enlargement of the cysts and coincidental loss of renal function more than temporarily. If a surgical procedure is to be undertaken at all, the presence of a sufficient functional reserve in the opposite kidney should be assured more carefully than though the polycystic disease did not exist. The tendency at present is to operate in cases in which previously a strictly conservative attitude has been followed. Surgical renal lesions do not differ greatly in their pathologic nature and pathogenesis here from those occurring in a congenitally normal kidney and their treatment need not be changed materially. Puncture or excision of the cysts may have a beneficial effect on general symptoms, and, in a measure, control pain, infection and hemorrhage.[7] The fact that the remaining polycystic kidney will not be improved by removal of its diseased fellow but will continue to enlarge and finally fail need not be a hindrance to the removal of the diseased polycystic one

1. Wharton, L. R.: Surg., Gynec. & Obst. **60**: 689 (March) 1935.
2. Colston, J. A. C.: J. Urol. **33**: 110 (Feb.) 1935.
3. Waters, C. A.; Lewis, L. G., and Frontz, W. A.: South. M. J. **27**: 290 (April) 1934. Wharton, L. R.: Preoperative Irradiation of Massive Tumors of the Kidney, Arch. Surg. **30**: 35 (Jan.) 1935. Waters, C. A.: Am. J. Roentgenol. **33**: 149 (Feb.) 1935.
4. Wharton, L. R.: Discussion of Dr. A. E. Bothe's paper, J. Urol. **35**: 459 (May) 1935.
5. Hagner, F. R., and Coleman, S. R.: J. Urol. **32**: 27 (July) 1934.
6. Portmann, U. V.: J. Urol. **31**: 721 (May) 1934.
7. Walters, Waltman, and Braasch, W. F.: Surg., Gynec. & Obst. **58**: 647 (March) 1934.

if it is otherwise affected so as to present a hazard to the life or health of the patient. The complicated polycystic kidney may be removed for the same reasons that a similarly complicated congenitally normal one would be removed, and with the same or more rigorous precautions as to immediate renal insufficiency and death from anuria.

ECHINOCOCCIC RENAL CYSTS

Renal hydatid disease is rare in North America [8] and most of the cases reported have been diagnosed as renal or abdominal neoplasms or cysts before operation. Accordingly, any one doing abdominal or renal surgery should be informed as to the general characteristics of the disease in order to be prepared to handle it adequately should it be unexpectedly encountered at operation. In view of their rarity in the United States, information as to their management must be taken from the literature of other countries where the incidence is greater.

The disease is slow in its evolution and unless treated surgically eventually causes death. Apart from an abdominal or lumbar mass and slight hematuria, no symptom may occur unless the cyst breaks into the kidney pelvis, after which scolices and daughter cysts appear in the urine accompanied by moderate hematuria and often by renal colic.

The thick, opalescent wall should enable a fairly accurate differentiation to be made between a hydatid and solitary cyst when it is exposed at operation. Craig and Lee Brown [9] designate renal hydatids as open if they have broken into and communicate with the renal pelvic system and as closed if this has not occurred, and consider this an important distinction in determining whether conservative surgery is permissible or not. They state that gross infection of the cyst is generally fatal and that for successful treatment it is essential to avoid this accident.

In dealing with closed renal hydatids according to their technic, the cavity of the exposed cyst is opened by as small an incision as is practicable and its fluid contents are aspirated through a trocar, care being taken to prevent soiling the surrounding tissues lest implantation of the scolices or anaphylaxis result. The cyst cavity is then filled with alcohol for five minutes to kill active elements in the germinal membrane, after which the contents are thoroughly evacuated and the abdominal wound is closed accurately about the opening in the cyst, rubber dam drainage being left down to but not into the cyst. They believe that the latter point is important in avoiding infection of the interior of the cyst, which may occur if large tube drainage is employed. Open cysts are treated by nephrectomy.

SOLITARY CYSTS

Large serous cysts are generally unilocular, single and present in only one kidney; they are indefinite as to etiology, uncertain as to diagnosis and favorable as to prognosis.

The simplest treatment consists in trimming off the cyst wall down to the juncture with the kidney substance, destroying the intrarenal lining membrane with phenol (carbolic acid) followed by alcohol and then closing the remaining cavity, either with or without drainage as seems to be indicated by its size.[10] This procedure is ordinarily simple and easily executed and affords as good a prospect of permanent cure as does either resection of the kidney or enucleation of the cyst itself from the kidney parenchyma by either blunt or sharp dissection. Either of the latter presents the hazard of starting an uncontrollable hemorrhage that may necessitate nephrectomy. By reason of the long continued fistula that it is apt to follow, marsupialization should be used only if adhesions prevent either nephrectomy or excision of the cyst wall and destruction of lining membrane. Nephrectomy in cysts is reserved for instances in which the kidney is largely destroyed either by the cyst or by intercurrent infection or if some other disease, such as tuberculosis or neoplasm,[11] is present and requires it.

Since a large proportion of hemorrhagic cysts have been found on painstaking histologic examination to contain carcinoma cells in their walls, the possibility of a neoplasm as a basic cause must be thought of, if the contents of the cyst are hemorrhagic, and the cyst wall carefully examined for it before one decides on a conservative course. If the wall contains thickened areas or if the internal surface is rough after any layers of partially organized clots have been removed, malignancy may be suspected and nephrectomy done unless it can be safely excluded.

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8. Livermore, G. R.: Tr. Am. A. G.-U. Surgeons **22**: 19, 1929.
9. Craig, Gordon, and Lee Brown, R. K.: Surg., Gynec. & Obst. **46**: 668 (May) 1928.
10. Herbst, Robert, and Vynalek, L. W.: Solitary Serous Renal Cysts, J. A. M. A. **96**: 597 (Feb. 21) 1931. Walters, Waltman, and Watson, J. R.: S. Clin. North America **14**: 651 (June) 1934.
11. Colston, J. A. C.: J. Urol. **19**: 285 (March) 1928.

TERATOID TUMORS OF THE TESTIS

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This paper is a clinical study based on the records of 292 patients with testicular teratomas. It is presented at this time because the increased number of patients permits better evaluation of radiation therapy in this disease and because there have been recent improvements in diagnostic and therapeutic procedures.

PATHOLOGIC ANATOMY

The natural history of the disease must be understood before testicular teratomas can be properly managed. Much is still unknown regarding the origin of these tumors. Ewing's theory probably has widest acceptance. He believes that all teratomas arise from sex cells, most frequently situated in the rete testis but sometimes present in the tunica albuginea. The sex cells are totipotent and for this reason may produce any of the tissues derived from the three primary germ layers. There seems to be a tendency for one type of tissue to outgrow the others, because in most tumors either one tissue predominates or only one tissue is found. After recently reviewing more than 300 microscopic sections of testicular tumors, Ewing stated that he was quite certain that his theory was sound. He said that he was positive of the origin of the common embryonal carcinoma with lymphoid stroma and that in the large group of sections he was able to find every intermediate stage between it and the nonmalignant adult teratomas.

From the clinical standpoint teratomas may be divided into three groups, the adult tumors, intermediate tumors and embryonal tumors. Representatives of

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these groups differ considerably in cellular structure and show wide variation in their clinical course and response to treatment.

1. Adult teratomas probably comprise less than 10 per cent of all teratomas. In this series they were but 7 per cent of the total number of tumors classified by Ewing. They grow slowly and remain localized. For years they may cause discomfort only on account of their size and weight. Under the microscope, these tumors are found to be composed of adult tissues of one or several types with orderly cell arrangements. Fragments of all organs and tissues have been identified in these growths. Simple orchidectomy is sufficient to cure the patient.

2. The intermediate type of teratoma is partially composed of adult tissues, but it contains malignant embryonal tissue as well. When a complex teratoma gives rise to metastases, the metastatic tumors are nearly always of a uniform composition and consist of the same tissue as the most malignant fraction of the primary growth. Therefore the natural history of these tumors is that of the embryonal portion.

3. The embryonal teratomas are by far the most common type and are noted for their aggressive qualities. They give rise to rapidly growing metastases through both lymphatics and veins. While tumors within this group may be made up of different types of tissue and tumors of the same general type may vary in degree of malignancy, it is rare to find any but the higher grades of malignancy represented.

TABLE 3.—*Initial Symptom of 250 Patients*

	Per Cent
Painless swelling of testis	78.0
Swelling with moderate pain	6.0
Swelling and hardness	3.2
Hardness	2.8
Pain in testis	2.4
Pain and swelling in groin	2.4
Pain in abdomen	1.2
Pain in lumbar region	0.8

Certain individuals first noted one of the following symptoms: loss of weight; swelling of leg and thigh; a mass in the abdomen; shrinking of the testis to half the normal size without apparent cause followed by enlargement; the presence of a cordlike growth above the testis.

Observation of many cases has shown that metastatic deposits grow rapidly. Less is known of the rate of growth of the primary tumors. Probably the dense tunica albuginea retards enlargement. Most patients describe a slow but steady growth. Occasionally a tumor reaches a certain size and stops growing for months or years, when enlargement is resumed, usually at a more rapid rate. A slowly growing or quiescent tumor may be traumatized and the rate of growth greatly accelerated. A number of undescended testes, soon after the beginning of enlargement, descended into the scrotum. This was probably caused by the hormone from the anterior lobe of the pituitary gland, because the same result may follow the therapeutic administration of this substance for cryptorchism.

Metastasis occurs relatively early, although there is some variation caused by differences in the structure of the primary tumors. I have seen patients with widespread metastases from tumors no larger than 1 cm. in diameter. A number of patients were aware of metastatic tumors before testicular enlargement had been noted. This was more common when the testis was in an abnormal position and could not easily be examined. In most cases lymphatic extension precedes dissemination through veins. The usual route follows lymphatics of the spermatic cord through the pelvic and lumbar vessels to epigastric nodes and thence up the prevertebral chain through the mediastinum and along with the thoracic duct to the left supraclavicular fossa. Below the level of the epigastric nodes it is rare for metastases to be found on the side of the body opposite the affected testis. Cephalad from the epigastric nodes, metastases from either testis follow the same course. Along this route there are certain regions where metastatic tumors most frequently develop. The most common site for palpable metastases to be found is in the abdomen at the level of the origin of the renal arteries. Epigastric nodes are usually the next invaded, then nodes in the mediastinum and hilus of the lungs, and finally the signal node in the left supraclavicular fossa. Extension along lymphatics is rapid in most cases. By the time a palpable mass is present in the midabdomen it is likely that other, less accessible, regions have been affected. Not infrequently the disease is widespread without any metastases palpable. These facts make it impossible for surgical operations to control the disease.

Metastasis through veins occurred in one third of the patients with metastases. In practically every case they were first demonstrable in the lungs. Excluding the lungs, blood-borne metastases were not found with regularity in any organs, although the brain was invaded next in frequency and in individual cases postmortem examination showed deposits in practically all parts of the body.

The average length of survival of 114 patients who died of teratoma and who had remembered the date of the first symptom was twenty-four months. Since all these men had received treatment, this figure fails to show the actual rapidity with which the disease progresses.

SYMPTOMS

The first symptom in the majority of cases is a painless swelling of the testis, a remarkably insignificant change in the light of possible later developments. Few patients have serious discomfort at first. Those who do usually have undescended testes in which early changes cannot readily be detected. After the first symptom most of the patients notice a gradual but steady enlargement of the testis. In a few cases, as have been described, the growth of the tumor is interrupted by a period of quiescence, which may last for months or even years. Most patients notice an early alteration in the consistence of the testis. Usually it feels firm and elastic. It may become quite hard, or differences in density may be felt in different parts. As the tumor increases in size, pain becomes more noticeable. Sometimes the discomfort is in the affected testis, but more often it is described as a dragging sensation in the groin. Since a suspensory gives relief, the distress is probably due to the weight of the tumor. Unless the disease is promptly checked, it may not be long before the patient complains of a dull, aching pain in the lumbar region on the side of the affected testis and notices belching of gas after meals, sometimes associated with loss of appetite and constipation. These symptoms of retroperitoneal involvement occur before the metastasis is palpable. When epigastric nodes are invaded, the symptoms are more striking and are at their worst after eating when the man is likely to vomit. The appetite may not be lost; but, since it is difficult for food to pass onward from the stomach, the body weight and strength decline. Metastases in the chest are usually demonstrable before they cause symptoms. Enlargement of lymph nodes in the medi-

astinum or infiltration at the hilus of the lungs may be considerable before symptoms arise. Then the patient may have a sense of fulness beneath the sternum, he may become short of breath, or he may begin to cough. In the same way intravenous metastases in the lung parenchyma may become extensive before symptoms arise. They excite coughing, which later is accompanied by the production of bloody sputum. Hemorrhages into the lungs sometimes occur. Pleural involvement is rare. Metastases in the nodes of the left supraclavicular fossa hardly ever produce symptoms even when they reach great size. Symptoms from brain metastases depend on the area affected. Accurate localization is usually possible.

If metastases spread beyond the ordinary channels, characteristic symptoms may arise, depending on which body functions are affected; but in most of these cases such urgent symptoms are already present that the secondary changes are masked and the full extent of the disease is found only post mortem.

The early symptoms of teratoma, especially testicular enlargement, seem to give the patients concern. Sixty-six per cent of the patients consulted physicians within four months of the first symptom.

DIAGNOSIS

While in most cases the testis is an exposed organ and changes in its size or consistence seem to be readily appreciated by men of average intelligence, teratomas develop so rapidly that by the time the patient first consults a physician metastasis may have occurred. Of thirty-nine patients seen at the Memorial Hospital within three months of the first symptom, 67 per cent had metastases. When it is so essential to make a correct diagnosis without delay, every intrascrotal swelling should be examined with the possibility of teratoma in mind.

The patient is usually a young man who complains of swelling of one testis. After the scrotal contents have been gently palpated in the erect position and varicocele has been ruled out, the patient should be placed in the supine position with the thighs, abdomen, chest and neck uncovered. Inspection shows a unilateral tumor in the scrotum. The average teratoma is about twice the size of a normal testis when the patient first visits his physician. In most cases the skin overlying the tumor is normal. Sometimes if the growth is large the skin is tense and glazed. At the base of the penis there is no swelling as there is with a hydrocele to cause an apparent shortening or retraction of the penis. The abdomen, chest and neck should be carefully observed, because occasionally metastases may be seen, particularly if they are present in the chest wall or in the left supraclavicular fossa.

Only the lightest touch should be used in examining testicular tumors. Palpation usually reveals a smooth, elastic, symmetrically enlarged testis, although stony hard areas may be present or the finger tips may sink into cystic depressions. The shape of a normal testis is maintained because of the dense, inelastic tunica albuginea. The tumor is seldom sensitive. The growth nearly always is limited to the testis, and the epididymis feels normal. Also in most cases there is a clear cut line of demarcation between the testicular tumor and a normal spermatic cord. The records in the present series contain four cases (about one in seventy-five) in which involvement of the spermatic cord was continuous with the growth in the testis. Not infrequently fluid surrounds the tumor. If it is aspirated without puncturing of the tunica albuginea, no harm is done and the testis can be palpated more easily. Usually the fluid is clear. If it is bloody the growth has probably invaded the epididymis, because all the testis is enclosed within the impermeable tunica albuginea. If pulsation of the spermatic artery can be felt, it is supposed to be evidence of testicular tumor. The tumor does not transmit light.

Metastases are not found in the inguinal lymph nodes unless the scrotum has become involved. Pelvic examination by rectum is usually negative, although in a few cases, mostly late in the disease, a firm rounded mass can be felt somewhat above and lateral to the upper limits of the prostate.

Often the diagnosis is in doubt when based on examination of the testicular tumor alone, especially when a hydrocele has been found or the patient's story suggests an injury, torsion of the spermatic cord, or tuberculosis. If a characteristic metastatic tumor can be discovered, the problem is simplified. Therefore in every case of testicular enlargement the abdomen, chest and supraclavicular fossa should be examined, and when a man has a tumor of the abdomen, chest or left supraclavicular fossa the scrotal contents should be carefully palpated.

Abdominal metastases are found on the same side as the primary tumor and are at the level of, or somewhat caudad to, the umbilicus. When palpable they are single, rounded, firm, fixed and not tender. Because they are retroperitoneal, percussion shows that they are overlain with intestine. If the mass is on the left side, a stomach distended by gas will cover the tumor. Metastases in the epigastrium are not easily felt.

Roentgenograms of the chest should be taken as a routine in search of the earliest evidence of intrathoracic metastases. Extensions of the disease through lymphatics cause a widening of the mediastinum or an infiltration of the hilus of the lungs. Intravenous metastases are round, dense, sometimes single but usually multiple and are situated in the parenchyma of the lungs. Metastases in the well known signal node in the left supraclavicular fossa may be of almost any size. If they are searched for they are easily found when present and their nature should be readily recognized.

If a patient is examined within a few weeks of orchidectomy, the distal end of the spermatic cord will feel indurated even though it is not the seat of tumor.

The dense tunica albuginea is an important natural barrier to the spread of a teratoma and it should never be incised for the purpose of obtaining a specimen for histologic examination. Whenever this mistake is made the tumor promptly fungates and spreads rapidly. I have found that a biopsy can be safely performed by aspiration through an 18 gage needle if intensive irradiation is given as soon as a positive report has been returned. Since all the steps of an aspiration biopsy can be performed within ten minutes, the patient's safety is not unduly jeopardized. Supraclavicular nodes and other superficial tumors of a suspicious character can also be accurately diagnosed by this method. In addition to the foregoing examinations, the first specimen of urine voided in the morning is referred to the laboratory for the Aschheim-Zondek test.

A minority of the patients in this series were correctly diagnosed at their first examinations. Teratomas were diagnosed as hydrocele, epididymitis, tuberculosis, gumma, hernia, hematoma, and torsion of the spermatic cord. Metastases were thought to be

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gallstones or hypernephromas. While incorrect treatment was being given, 195 patients lost an average of six and one-half months before they were referred to the Memorial Hospital. This delay was partially responsible for 73 per cent of the patients having metastases on admission.

THE USE OF THE ASCHHEIM-ZONDEK TEST

Estimation of the amount of follicle-stimulating factor excreted in the urine may be of considerable value in the diagnosis and prognosis of teratoid tumors of the testis. The technic described by Ferguson [6] must be followed. The usual test for pregnancy is not sufficiently sensitive. Many misunderstandings and serious errors have been caused by this factor having been overlooked. The report should always describe the strength of the reaction in the number of mouse units per liter of urine, because the significance of the test largely depends on quantitative output. Of greater value than a single test are a number of tests performed at intervals. In some instances, to be described later, a series of tests may be required for diagnosis, and in all cases repeated tests are necessary for estimating prognosis.

Like other laboratory tests employed in clinical medicine, the Aschheim-Zondek test is valuable only when correctly interpreted. A clinician using the test in cases of testicular tumors must know its limitations and in each case correlate the laboratory observations with accurate knowledge of the patient's condition.

The reason for the appearance of the follicle-stimulating factor in the urine of men with teratoma is not positively known. Various theories have been presented elsewhere. It is most likely that teratomas produce a hormone which stimulates the basophilic cells of the anterior lobe of the pituitary gland to put out follicle-stimulating factor. Its presence in the urine of a man is abnormal and is an indication for a thorough examination.

For the sake of clearness and brevity the test will be interpreted on the basis of hypothetical cases. Assuming that a man appears for examination with an enlarged testis of a few months duration, that he has received no treatment and that there is no evidence of metastases:

1. If the test is negative it is probable that the patient has no teratoma. It is possible that he has an adult teratoma which has not destroyed the interstitial cells of the testis.

2. If the test shows 500 or less mouse units per liter of urine it is probable that the patient has a teratoma. This may be of an adult type, such as an adult cystic teratoma that has largely or wholly destroyed the interstitial cells of the testis, or it may be a smaller tumor of a low grade of malignancy which has not destroyed the interstitial cells. It is possible that the testis is the seat of syphilis, tuberculosis, interstitial orchitis or any other condition that would cause swelling and complete destruction of the interstitial cells. It should be understood that it is exceptional for a testis affected with syphilis, tuberculosis or interstitial orchitis to have all the function of the interstitial cells destroyed so that a positive test is obtained.

3. If the test shows between 500 and 1,500 mouse units per liter of urine, the tumor is probably a seminoma.

4. An output of between 2,000 and 10,000 mouse units per liter indicates an embryonal carcinoma with lymphoid stroma.

5. An output of more than 10,000 mouse units per liter of urine indicates an embryonal adenocarcinoma or a chorio-epithelioma.

If a man has an untreated tumor of the testis and evidence of metastases, the Aschheim-Zondek test will be positive with probably more than 1,000 mouse units per liter output. In this group also the histologic make-up of the tumors may be indicated by the quantity of follicle-stimulating factor excreted. While in general in untreated cases the output is increased in proportion to the extent of metastases, the increment is less than that caused by a higher grade of malignancy. No condition other than teratoma has been known to present this clinical picture together with a positive Aschheim-Zondek test.

If a patient has been recently castrated for a testicular swelling and there is no evidence of metastasis, a single test is of little value. In these cases, in addition to frequent physical examinations, the test should be repeated every week or two. If histologic examination of the excised testis shows teratoma and the general trend of the tests during several months indicates a constantly diminishing output of the follicle-stimulating factor, the patient was probably cured by operation. If the output of the follicle-stimulating factor steadily increases, it is probable that metastases are present whether or not they are demonstrable by other methods.

If a patient has a testicular tumor without evidence of metastasis and a positive Aschheim-Zondek test has been obtained, it will be discovered in many cases that a short time after the tumor has been given intensive irradiation the test will become negative. This indicates that the tumor was radiosensitive and suggests a favorable prognosis. On the other hand, in those cases in which the test remains practically the same after irradiation as before, the tumor has always been found to be radioresistant and the outcome has been fatal regardless of how intensive the treatment has been. Ferguson has emphasized the invariably bad prognosis of a persistently high output of follicle-stimulating factor after irradiation of the primary tumor. In a number of these cases, prognosis based on histologic examination was relatively good, for the structure of the tumors showed radiosensitivity. The fact that the biologic test proved superior in prognostic value to the histologic examination suggests that other tests may be discovered in the future of greater accuracy than any now known.

There is a large group in which it has been recently learned that the Aschheim-Zondek test is of doubtful value. It is composed of those patients who have had the diseased testis removed surgically or treated intensively with radiation and have been free from evidence of disease for a number of months or years. They may or may not have had metastases when treatment was begun. These men have an irregular output of follicle-stimulating factor, which may vary from zero to 2,000 mouse units per liter within a few days with no demonstrable changes in their physical examinations. The cause of this phenomenon is not known. For some time my associates and I were much disturbed by finding a comparatively high output in a number of patients who had been clinically well for several years. When it became obvious from repeated tests that the reports followed no definite trends and were in no way

6. Ferguson, R. S.: Am. J. Cancer **18**: 269-294 (June) 1933. Ferguson, R. S.; Downes, H. R.; Ellis, E., and Nicholson, M. E., ibid. **15**: 835-843 (April) 1931. Ferguson, R. S.: Pathologic Physiology of Teratoma Testis, J. A. M. A. **101**: 1933-1937 (Dec. 16) 1933; Am. J. Roentgenol. **31**: 356 (March) 1934.

substantiated by physical observations, it was concluded that in these cases the output of follicle-stimulating factor was dependent on some unknown but late factor of hemicastration. Therefore the Aschheim-Zondek test is not recommended for diagnosis or prognosis later than approximately eight months after irradiation or surgical removal of a testis.

HISTOLOGIC DIAGNOSIS

The histology of teratomas need not be described. It is well known that in the adult tumors various tissues and fragments of organs may be identified and that the embryonal carcinomas are characterized by a highly malignant appearance. There is another microscopic picture, which has not been previously described but which is of great clinical importance. It is seen in radiosensitive tumors after irradiation with such frequency as to make it a pathologic entity. Clinicians and pathologists should recognize the condition; otherwise the patient will lose the benefit of further treatment.

A few irradiated tumors are transformed into a necrotic mass of shadow cells surrounded by a relatively avascular fibrous capsule. The diagnosis of embryonal carcinoma can still be made from the arrangement of the shadow cells, although the individual cells are necrotic. A later stage of this process transforms these necrotic cells into a homogeneous, caseous-looking mass in which no cell outlines can be distinguished and the lesion may be, and in several instances has been mistaken both grossly and microscopically for, a gummatous testis. Later stages of these changes have not been traced, but probably the end result is a relatively avascular cicatrix.

In other tumors, the result of irradiation, in addition to necrosis of tumor cells, is damage to blood vessels, hemorrhage, and conversion of the involved testis into a hematoma. In the end stage the lesion cannot be distinguished from any other hematoma with added radiation changes. Its final organization also has not been traced but there is no reason to believe it different from that of any other hematoma.

A third postirradiation result presents a more complicated picture. One finds the testis transformed into a loose fibrous reticulum, poor in cells. The spaces of the fibrous reticulum represent the former location of strands of tumor cells and more peripherally of testicular tubules, which, in the original lesion, may have been lined by tumor cells. Surrounding each of these spaces left by the disappearance of tumor or testicular parenchyma is a thick, homogeneous, hyaline membrane doubtless in part the remainder of a basement membrane and in part a hyaline thickening of the stroma of the preexisting tumor. An occasional remnant of a hydropic degenerated cell, unidentifiable as to type, may line the hyaline membrane. In the interstices of the spongy, coarse reticulum one finds occasional lymphocytes, probably the remains of the lymphoid stroma possessed by many of these tumors. With time the productive fibrosis increases and results in the obliteration of the spaces, some of which become lined by calcific deposits. Here again the end result seems to be an atrophic hyaline scar tissue poor in blood supply.

TREATMENT

Study of the natural history of the disease shows that the great majority of teratomas are highly malignant and metastasize relatively early. Also, soon after they occur metastases spread with great rapidity to inaccessible parts of the body. These facts alone should make one hesitate before employing surgery as the treatment of choice. Furthermore, on the basis of end results the recent statistics of Hinman [7] and the review of Wasterlain [8] show that there is no justification for either simple orchidectomy or the radical Hinman-Chevassu operation.

Wasterlain concluded that fewer than 6 per cent of the patients were alive four years after simple orchidectomy. This figure corresponds with the incidence of nonmalignant adult teratomas. As to the radical operation, Wasterlain states that in France the four year end results have not justified its original theoretical promise.

Gregoir, who performed the first radical operation, states that twelve of his thirteen patients died between two and twenty-four months following operation. The only survivor is still living after nineteen years, but no metastatic lymph nodes were found in this case. Gregoir concludes that simple castration might have produced the same result.

Hinman gives the only five year end results of radical surgery in the treatment of teratoma testis. He shows that, of 100 patients operated on by American surgeons, seventeen are free from evidence of disease five years after operation.

Five year end results following the use of radiation show its superiority even when a large proportion of the patients had far advanced disease and many were treated by the relatively inefficient early methods.

During the past fifteen years, improvements have been made in the sources of radiation and in the methods by which the agent has been applied. At present we employ the 200 kilovolt roentgen-ray unit and treat patients with the divided dose technic. This method is most efficient in treating deep tumors, so situated in the body that roentgen rays can be directed on them through several different skin portals. Full advantage is taken of the fact that there is a considerable amount of regeneration in the skin and superficial tissues in the time between treatments. When repeated suberythema doses of radiation are given a skin portal with a day or two intervening, a far greater aggregate dose can be given than if a full skin dose were given in a single application. Of course regeneration also takes place in the tumor between treatments, but when a number of portals are used in turn the tumor is irradiated daily while each portal is permitted several days' regeneration between treatments. Therefore the net result of the divided dose technic is a greater total amount of radiation delivered to the tumor with less damage to the overlying tissues.

When there is no evidence of metastases, primary testicular tumors should be irradiated and then removed. Observation of a number of cases in which preoperative irradiation had transformed highly malignant tumors to necrotic débris suggested that, from the theoretical standpoint, it would be advantageous to operate on teratomas after their growth properties had been destroyed. It is impossible to know how frequently operative trauma produces metastases but there is no question as to the cause of the not infrequent local recurrences in the operative wound. In practice, preoperative irradiation has been valuable. We have never had a local recurrence after orchidectomy. Also comparison of the end results when patients were treated otherwise identically shows a difference

7. Hinman, Frank: Surg., Gynec. & Obst. **56**: 450-461 (Feb., No. 2 A) 1933.
8. Wasterlain, A.: J. belge d'urol. **3**: 149-292, 1932.

in the five year survival of 22 per cent in favor of those irradiated before orchidectomy. (See groups 1 and 5 under Results.)

The primary tumor is measured with calipers and then given three doses of 500 roentgens each in five days.[9] Every few days the tumor is again measured. In most cases regression in size is prompt and continues until the affected testis is little if any larger than its normal mate. This shrinkage usually requires from four to six weeks. When this stage is reached, orchidectomy is carefully performed. The spermatic cord is first crushed and ligated at the subcutaneous inguinal ring; then the tumor with the tunica albuginea intact is gently freed and removed.

TABLE 4.—*Results in Group 1*

Number of patients	23
Living without evidence of disease	18, or 78 per cent
Dead or lost from follow up	5, or 21.7 per cent

Years of Life After Irradiation of Patients Now Living

0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10
2	1	1	2	1	1	5	1	1	3

Five Year End Results	
Number of patients	14
Living and well	11, or 78.5 per cent
Dead or lost	3, or 21.4 per cent

TABLE 5.—*Results in Group 2*

Number of patients	39
Living without evidence of disease	11, or 28.0 per cent
Dead or lost from follow up	28, or 72.0 per cent

Years of Life After Irradiation of Patients Now Living

0-1	1-2	2-3	3-4	7-8	9-10	10-11
3	1	1	3	1	1	1

Five Year End Results	
Number of patients	21
Living and well	3, or 14.0 per cent
Dead or lost	18, or 86.0 per cent

When measurements show no reduction in the size of a tumor two or three weeks after irradiation, it is removed without further delay. In these cases the tumor is either radioresistant or it has been transformed by radiation into a hematoma.

The fact that cellular devitalization follows the administration of the amount of radiation which we employ for preoperative use does not mean that the initial regression necessarily is a permanent one. Unless supplemented by orchidectomy or additional irradiation, it is possible that the primary regression might be followed by tumor regeneration. However, the dose recommended is of such strength that it will cause devitalization of the great majority of teratomas and at the same time leave the overlying tissues in such a condition that they will readily heal after operation.[10]

With radiation available, the only reason for the operative removal of a radiosensitive teratoma is the preservation of the spermatogenic function of the remaining testis. A number of patients have refused orchidectomy and are among those well for more than five years. However, they were irradiated repeatedly because the minimum dosage requirements are not known and in spite of all protective measures the spermatogenic function of the normal testis was destroyed.

If, in addition to the primary tumor, a patient has metastases, orchidectomy is seldom performed. Treatment of the testis is repeated several times at as short intervals as the skin will tolerate.

Whether or not metastases can be found, the pelvic and lumbar lymphatics of the same side as the affected testis and the epigastric region are given full doses of radiation. The abdomen is divided into the following six portals: (1) lower abdomen anterior, (2) lower abdomen posterior, (3) midabdomen anterior, (4) midabdomen posterior, (5) epigastrium anterior, (6) epigastrium posterior. Two portals are treated daily with a skin dose of 300 roentgens to each until from 2,100 to 3,000 roentgens have been given each portal. The two daily exposures are given to different regions, because cross-firing the same region often causes nausea.

When metastases are found in the lungs or mediastinum, enough anterior and posterior portals are mapped out to include all the affected regions. Two portals are treated daily with a dose of from 200 to 300 roentgens to each until each portal has received approximately 2,000 roentgens. Cross-firing is also to be avoided in treating the chest.

The doses of radiation described will cause regressions in the great majority of metastases and will be well tolerated by the average patient. However, one must be prepared to change details of the treatment at any time in order to cause the greatest possible regression of the tumor with the least discomfort to the patient.

RESULTS

GROUP 1.—*Primary Operable.*—When first seen at the Memorial Hospital, these patients had primary testicular tumors with no evidence of metastasis. Details are given in table 4.

TABLE 6.—*Results in Group 3*

Number of patients	3
Living without evidence of disease	3, or 100 per cent

Years of Life After Irradiation of Patients Now Living

6-7	11-12	17-18
1	1	1

Five Year End Results	
Number of patients	3
Living and well	3, or 100 per cent

TABLE 7.—*Results in Group 4*

Number of patients	162
Living without evidence of disease	42, or 26.0 per cent
Dead or lost from follow up	120, or 74.0 per cent

Years of Life After Irradiation of Patients Now Living

0-1	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	15-16
6	9	2	5	6	1	3	3	2	1	1	1	1	1

Five Year End Results	
Number of patients	104
Living and well	20, or 19.0 per cent
Dead or lost	84, or 81.0 per cent

GROUP 2.—*Primary Inoperable.*—In addition to untreated primary tumors, these patients had inoperable metastases when first seen (table 5).

GROUP 3.—*Recurrent Operable.*—These patients had been operated on in other institutions. When first seen at the Memorial Hospital they had local recurrences that were considered operable. Nevertheless they were treated with radiation (table 6).

9. The following factors are now employed: 200 kilovolts with 30 milliamperes of current and filtration of 0.5 mm. of copper and 1 mm. of aluminum. All primary testicular tumors are treated at 50 cm. distance, all metastases at 70 cm. The skin portals are as large as the size of the patient permits.

10. In a group of tumors of different sizes in which microscopic examinations showed that preoperative irradiation had caused complete necrosis, computations showed that the amount of radiation received by the portion of the tumor farthest from the source of radiation varied between 0.8 and 1.6 threshold erythema doses. The centers of these tumors received between 1.7 and 2.5 threshold erythema doses.

V 19

GROUP 4.—*Recurrent Inoperable.*—This group, which comprised 58 per cent of the entire series, was made up of patients operated on in other institutions. When first seen at the Memorial Hospital all had metastases and many, in addition, showed local recurrences (table 7).

GROUP 5.—*For Prophylactic Irradiation.*—These patients had been operated on in other institutions.

TABLE 8.—*Results in Group 5*

Number of patients	50
Living without evidence of disease	28, or 56.0 per cent
Dead or lost from follow up	22, or 44.0 per cent

Years of Life After Irradiation of Patients Now Living

0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	9-10	10-11	14-15
3	3	4	6	1	4	2	2	1	1	1

Five Year End Results	
Number of patients	28
Living and well	12, or 42.8 per cent
Dead or lost	16, or 57.2 per cent

TABLE 9.—*Five Year End Results for the Entire Series*

Number of patients	170
Living and well	49, or 29.0 per cent
Dead or lost	121, or 71.0 per cent

They were referred to the Memorial Hospital before metastases could be found. They were treated by the usual methods of irradiation (table 8).

SUMMARY

A clinical study has been made of 292 patients with testicular teratomas. Compared with all admissions to the Memorial Hospital between 1917 and 1929, teratoma testis comprised 3.39 per cent of all tumors of the genito-urinary system, 2.09 per cent of all malignant tumors in males, and 1.008 per cent of all malignant tumors in both sexes. The patients varied in ages between 1 year and 70. The average age was 31.87 years when the first symptom was noticed and 33.5 years at the time of admission to the hospital. Forty three per cent of the patients were between 25 and 35 years of age at the time of the first symptom, while 80 per cent were less than 40. No occupation seemed to predispose men to the production of teratoma. The marital status had no etiologic significance. No importance could be associated with race, creed or color. The right testis was involved in 52.2 per cent and the left testis in 47.6 per cent, a difference of 4.6 per cent. This difference could be accounted for by the greater frequency of undescended testes on the right side. A frequency of 14.28 per cent of the tumors was noted in undescended testes, which substantiates the belief that misplaced testes are especially liable to malignant changes. Trauma played little if any part in tumor production. No constitutional diseases were found that predisposed to teratomas. Positive signs of pulmonary tuberculosis were demonstrated in fewer than 10 per cent of all patients. Operations for hernia had been performed on 12 per cent before testicular enlargement was noticed.

Ewing's theory regarding the common origin of all teratomas was substantiated by his recent review of sections of 300 tumors. There are three principal clinical groups, adult teratomas, intermediate types and embryonal tumors, the latter making up the great majority.

Primary tumors usually grow steadily and metastasize relatively early through lymphatics and veins. Metastases grow rapidly and spread widely. The average time of survival of 114 patients who died of teratoma was twenty-four months from the onset of the first symptom.

The initial symptom of 78 per cent of the patients was a painless swelling of one testis. Symptoms caused by metastases are more clear cut and urgent. It is essential to make the correct diagnosis without delay because the disease may spread rapidly. Of thirty-nine patients seen within three months of the first symptom, 67 per cent had metastases. Every patient with a testicular swelling should have a thorough examination of the entire body. The Aschheim-Zondek test, when properly performed and correlated with the physical observations is of considerable diagnostic and prognostic value. The microscopic picture of radio-sensitive teratomas after irradiation is characterized by necrosis, hemorrhage and hyaline degeneration, probably followed by cicatrization.

Treatment of a primary tumor without metastases consists in irradiation followed by surgical removal from four to six weeks later. This devitalizes the tumor before operation and saves the spermatogenic function of the healthy testis. When metastases are present orchidectomy is seldom performed, and irradiation alone is employed in the treatment of both primary and secondary tumors.

In a series of 170 patients with teratomas, 72 per cent of which had metastasized, the five year end results after irradiation show 29 per cent of the men living and free from disease. On the basis of these results it seems reasonable to conclude that irradiation is the best treatment for testicular teratomas in all stages of the disease.

30 East Fortieth Street.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. LE COMTE AND DEAN

DR. LAWRENCE R. WHARTON, Baltimore: During the last four years I have irradiated the ordinary Grawitz hypernephroma, the cystic carcinoma, Wilms's embryoma (these were all massive tumors and the results have been very good) and, in addition, a cortical tumor of the adrenal, a massive tumor in a child 2 years old with sexual precociousness. This result also was good. I agree with Dr. LeComte that irradiation is not a curative procedure and that tumors of any size should be removed transperitoneally. The tumor must be removed without rupture. An incision in the lumbar region naturally gives one the quickest access to the tumor, but unfortunately that does not answer the problem. The crux of the situation is the renal pedicle. There are three things that have been helpful to me in removing kidney tumors. The patient must lie on his back with his back extended as if for a gallbladder operation. That brings the posterior abdominal wall closer to the surface. The anesthetic must be deep enough to give abdominal relaxation. The incision must be so large that one must never feel that one is working in a hole. The peritoneum is opened, the large intestine is pushed back and the posterior abdominal wall is exposed. In taking out a tumor of the kidney I always start the mobilization of the posterior peritoneum some distance from the tumor, mobilizing it freely all the way up along the intestine, which gives complete mobilization of the large intestine and the duodenum and gets them out of the way. It also gives a clear picture of the planes of cleavage around the kidney so that one does not have to approach the kidney or the tumor first. The tissues around it are mobilized. Having cut the peritoneum, one immediately comes down on the retroperitoneal region. This covers the ureter, the spermatic vessels and the kidney pedicle. In order to find the renal vessels clearly, one can pick up the ureter and follow it up or can mobilize the region of the lower pole and slide up along the pole until the pedicle is found. The planes

of cleavage are seen in this operation as they are not in a lumbar nephrectomy. In general, I would never remove the large tumors of the kidney without preoperative irradiation, and if the tumor is as large as a lemon or an orange I would always do the transperitoneal operation.

DR. HENRY SANGREE, Philadelphia: Dr. LeComte has advanced a new clinical classification of kidney tumors: those that are radiosensitive and those that are treated surgically. My anatomic and symptomatic division has been those tumors that are chiefly cortical and those originating in the kidney pelvis. The plea for early diagnosis and early surgical and roentgenologic treatment is of paramount importance, for it is well known that on the degree of malignancy depends proportionately the completeness of cure and the duration of life. Many tumors, especially those containing embryonal constituents that are considered inoperable, are considerably decreased in size because they are radiosensitive and after irradiation become good surgical risks. In a series of fifty kidney tumors, I had a case of Wilms's tumor, considered inoperable, which was markedly decreased in size by receiving roentgen treatment, and then the tumor was removed surgically. The child lived four and one-half years. Two other patients, one receiving surgical treatment and the other roentgen therapy, survived about one year and three years respectively. These results of kidney tumors in children closely correspond with the concept of the speaker, in that the tumor was the first symptom noticed, and the mortality rate, no matter what procedure was used, was much greater than that obtained in adult life. A point to be stressed is that the extensive irradiation of a tumor with the formation of dense scar tissue surrounding it makes a subsequent nephrectomy more difficult and may often outweigh the advantage gained by irradiation. Careful cystoscopic, pyelographic and urographic investigation is of extreme value in a case of hematuria. The triad of symptoms consisting of pain, tumor and hematuria is characteristic of kidney tumors, and in my series one or all appeared in 82 per cent of cases. Pain, however, was the most prominent symptom, and hematuria occurred least often as the chief complaint. Through such educational symposiums as this an increasingly greater number of cases of kidney tumors will be seen much earlier and a careful urologic and roentgenologic examination made, and through the cooperation of the surgeon, roentgenologist and pathologist a greater number of permanent and lasting cures will be effected, for on the size, extent and degree of malignancy depends hope for earlier diagnosis and earlier surgical cure.

DR. GEORGE C. PRATHER, Boston: While it is wise to continue the campaign for earlier diagnosis in all types of malignant conditions, no doubt urologists will continue to be faced with the problem of handling moderately large kidney tumors. Surgical technic in this problem has probably attained most of the accomplishments of which it is immediately capable, especially when the transperitoneal approach is used as recently described by Wharton. Therefore, if one cannot be assured of less advanced cases and if no remarkable improvement in surgical technic is available, other factors that may be of help must be searched for. In patients with no demonstrable metastases, who seem to have a chance of cure even though the local tumor is large, one might be able to be of service who gets the tumor cut without too much surgical shock and without inducing a spread of tumor cells. Preoperative or postoperative irradiation in the past, with a single or a few massive doses, has been extremely disappointing. I believe that the so-called fractional dose method of radiation treatment should be considered and probably used before operation in all tumors of the kidney cortex. While this requires daily roentgen treatment for approximately three weeks and an interval of approximately three weeks between the completion of this treatment and nephrectomy, it does give promise of being of definite value. The reduction in the size of the tumor makes nephrectomy vastly easier for both the patient and the surgeon. This response has been evident in my two cases. There has been no interference with surgery in the nature of fibrous adhesions and no interference with muscle or skin healing. The areas of devitalized cells in the tumor may also reduce the chance of cell dissemination at the time of operation. Dr. LeComte has rightly emphasized the fact that roentgen treatment will not kill all the tumor cells in the kidney, so that nephrectomy will continue to be necessary. The delay of six weeks before nephrectomy is not a valid objection. It will take time for all of us to collect sufficient observations on cases handled in this way and such reports will be awaited anxiously.

DR. BENJAMIN S. BARRINGER, New York: The tumor described by Dr. Dean is the one tumor of the body, in its more malignant aspects, in the embryonal type, in which external irradiation alone sometimes cures. The Aschheim-Zondek test has been puzzling because of irregular results, particularly after the testicle has been irradiated. I think that it is of great value, much as the Wassermann test is of value in the diagnosis of syphilis, but before irradiation of the testicle has taken place. I had a case in which I was puzzled as to whether the patient had a teratoma or an infectious testicle. The Aschheim-Zondek test showed a high titer of gonadotropic substance in the urine and I think that it clinched the diagnosis. In these cases it is of value. Just of what value it is in cases in which irradiation has been done cannot be told at present. I think it should always be used as a Wassermann examination is used, as an aid and not as a final judgment in the diagnosis or prognosis.

DR. RALPH M. LECOMTE, Washington, D. C.: My experience has not been the same as Dr. Sangree's with regard to preoperative irradiation of the renal neoplasm making operation more difficult. I think that it has made it easier; it controls a good bit of bleeding, the tumor is smaller and more accessible, and matters are very much facilitated. Irradiation will not cure these renal tumors. Since I have been in Atlantic City I have heard of another case in addition to that of Dr. Wharton in which radiation was used some three or four months ago and the pain and hematuria were stopped. The patient then refused operation and has had a relapse of his bleeding for more than a month. He will not be operated on but will follow through with irradiation and die.

IMMUNOTRANSFUSION AND ANTITOXIN THERAPY IN HEMOLYTIC STREPTOCOCCUS INFECTIONS

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Hemolytic streptococci produce disease by virtue of two attributes; namely, the ability of the bacteria to invade the body tissues and the capacity to form toxins. These are separate qualities requiring separate antibodies for their effective neutralization within the body. The immunologic evidence to support this conception is now sufficiently complete to warrant the therapeutic use of specific antitoxin and specific antibacterial antibody.

Bacterial invasiveness connotes the ability of an organism to invade the body and there cause local or disseminated abscesses, cellulitis or bacteremia. The capacity to invade is a primary attribute of virulence, because bacteria must be able to live and multiply in order to produce harmful toxins in the body.

The only definitely known method whereby the body can destroy gram-positive bacteria is the process of phagocytosis and intracellular digestion. Ward and Lyons [1] have recently presented a series of studies on the virulence of and the antibacterial antibody for the hemolytic streptococcus of human origin. The forms virulent for man possess distinctive cultural characteristics, develop capsules in young culture, and resist phagocytosis in blood that does not possess the type-specific antibacterial antibody, or opsonin, in the serum. Phago-

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1. (*a*) Ward, H. K., and Lyons, Champ: J. Exper. Med. **61**: 515-530 (April) 1935. (*b*) Lyons, Champ, and Ward, H. K., ibid. **61**: 531-543 (April) 1935.

cytosis by human leukocytes depends on the presence of this specific opsonizing antibody. Mouse protection is also correlated with its presence.

The hemolytic streptococci are a diverse group with an unknown and presumably large number of immunologically different types. The commercially prepared polyvalent antistreptococcus antiserums [2] were found not to possess this specific opsonizing antibody for any one of a large number of strains tested. So far it has been possible to produce the essential antibody only by the injection of living streptococci into animals. This obviously renders commercial production impracticable at the present time. It was then observed that healthy adults possessed this particular antibody for one or more strains of hemolytic streptococci. The concentration of the antibody in the serum of such individuals was sufficiently high to permit its transfer to nonimmune bloods in detectable in vitro quantity if a dilution of 1 : 8 (1 part of immune serum and 8 parts of defibrinated blood) was used. This experience suggested that transfusion from donors possessing such an acquired immunity might be a practical clinical procedure.

Although these studies have emphasized the importance of bacterial invasiveness and the antibacterial antibody, there is no attempt to minimize the importance of the toxins in the production of the clinical manifestations of hemolytic streptococcus infections. The best known of these toxins are the erythrogenic, or rash-producing, toxins responsible for cutaneous erythema, persistently high fever and rapid pulse. There are at least two, possibly more, of the erythrogenic toxins, and one strain of streptococcus may produce varying quantities of one or both.[3] Scarlet fever antitoxins and erysipelas antitoxins owe such therapeutic efficiency as they possess to their capacity to neutralize the erythrogenic toxins. Parish and Okell [4] have demonstrated that animals immunized to the toxin and then injected intravenously with a toxin-producing strain of hemolytic streptococcus are protected from an acute toxemic death but subsequently succumb to a generalized streptococcic infection. This experimental evidence is supported by the numerous clinical reports that the use of antitoxin in scarlet fever has effectively combated the toxemic manifestations but has not materially altered the incidence of the invasive complications such as cervical adenitis, otitits media and bacteremia. It is not yet possible to assess properly the importance of those other toxins produced by the hemolytic streptococcus and recognized in the laboratory as fibrinolysin,[5] hemolysin and leukocidin.

The foregoing considerations make it possible to consider hemolytic streptococcus infection in terms of septic (bacterial invasion) manifestations and toxic (erythrogenic toxemia) manifestations. This paper is a report on the technic of evaluating antibacterial immunity and the selection of donors with a high degree of acquired type-specific antibacterial immunity for purposes of immunotransfusion. A few illustrative cases are presented and discussed to emphasize the importance of treating these infections in the light of our present immunologic conceptions; that is, to administer antibacterial antibody or antitoxin or both when certain indications are present.

2. The antistreptococcus serums examined were obtained from three American and one European biologic products company.
3. Hooker, S. B., and Follansbee, E. M.: J. Immunol. **27:** 177-193 (Aug.) 1934.
4. Parish, H. J., and Okell, C. C.: J. Path. & Bact. **30:** 521-528 (July) 1927.
5. Tillett, W. S., and Garner, R. L.: J. Exper. Med. **58:** 485-502 (Oct.) 1933.

TECHNIC

The phagocytic technic described here has been previously reported.[6]

1. *Determination of Antibacterial Antibody in the Blood of Patients.*—About 8 cc. of blood is withdrawn by aseptic venipuncture and defibrinated by shaking in a flask with glass beads; 0.25 cc. of blood is measured into a pyrex glass tube 5 cm. long and 9 mm. wide. One drop (about 0.03 cc.) of a young culture of the streptococcus to be studied is added, the tube is sealed in an oxygen flame and rotated for thirty minutes at sixteen revolutions per hour at 37 C. The tube is then flamed and broken open, and one drop of the contents smeared as a blood film. This is stained with Wright's stain and examined with the oil immersion lens. A count is made of the number of intracellular streptococci contained in twenty-five polymorphonuclear leukocytes and the percentage of cells taking part in the phagocytosis is noted. A control slide is usually made from a similar preparation in infant's blood, but this control may be replaced by cultural tests after a little experience.

The bacteria for the phagocytic test are prepared by inoculating one drop of a sixteen-hour broth culture into 4 cc. of 50 per cent horse serum neopeptone water [1a] and incubating until the first clouding occurs—usually from two to four hours. The method of isolating virulent variants has been reported [1a] and all supposedly pure cultures of such virulent variants are checked repeatedly for failure to show spontaneous agglutination when an eighteen-hour culture in 5 per cent horse serum neopeptone water is mixed with saline solution and heated to 55 C. for three hours in a water bath.[1a]

2. *Selection of Donors for Immunotransfusion.*—The blood serum from each of the prospective donors is centrifugated free from cells. To 0.25 cc. of the patient's blood is added one drop of a given donor's serum. Tubes are so prepared for each prospective donor. The bacteria are added as before and the test is repeated. The slide showing the greatest amount of phagocytosis indicates the desired donor.

3. *Method of Selecting Antitoxin.*—In a limited series of cases it has been found that the injection of an erysipelas or scarlet fever antitoxin into the area of erythema accompanying a hemolytic streptococcus infection may produce one of two reactions. There may be a transitory blanching, which disappears as soon as the injection is stopped, or there may be a blanching that persists for from fifteen minutes to two hours. This prolonged blanching has been taken to indicate therapeutic potency, a belief that has been borne out by clinical observation. Antitoxins that do not produce this prolonged blanching have not produced any detectable clinical effect. The presence of toxemia is determined by the clinical observation of erythema, high fever and rapid pulse.

REPORT OF CASES [7]

CASE 1.—A. B. C., student nurse, reported off duty because of a painful, throbbing and reddened thumb, which she did not recall having injured. Examination revealed that there was a cellulitis of the thumb without appreciable elevation of the temperature or white count. There was an erythema at the base of the thumb without any clearly defined red streaks up the arm. There were, however, definite areas of tenderness along the lymphatic pathways of the arm and it was possible to palpate the thickened lymphatics when grease was applied

6. Ward and Lyons,[1] Lyons and Ward,[1] Ward, H. K., and Enders, J. F.: J. Exper. Med. **57:** 527-547 (April) 1933.
7. I am indebted to Prof. Hugh K. Ward, now of Sydney, Australia, for advice on the adaptation of the phagocytic technic to clinical usage.

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to the skin.[8] There was a small tender axillary node. After twenty-four hours of splinting and hot moist poultices the patient's temperature had risen to 105 F. and a subepithelial collection of thin pus was found at the tip of the thumb. This was opened and cultures were taken. Blood cultures were taken and later reported negative. On the morning of the third day in the hospital the entire arm was swollen and tender. The patient's blood was found to contain very little antibacterial

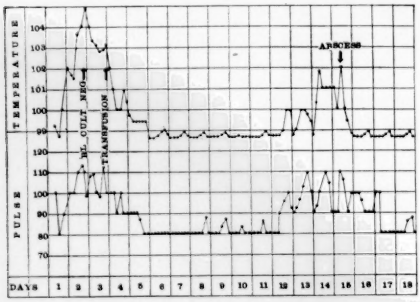

Chart 1.—Temperature and pulse in case 1.

antibody to the streptococcus from her thumb and that afternoon she was given an immunotransfusion from a donor selected by the method described. Within twelve hours the temperature and pulse rate began to fall, the swelling and tenderness of the arm diminished, anorexia and nausea disappeared and the patient volunteered that there was subjective improvement. After transfusion the blood was again tested and found to have an increased phagocytic efficiency (table 1). On the eleventh day of the disease the axillary node became tender and larger and progressed rapidly to fluctuation. This was drained and the pus yielded a pure culture of hemolytic streptococci. The later convalescence was uneventful. Two months after the patient's discharge her blood was again tested and found to have no antibacterial antibody demonstrable by the phagocytic technic. This would appear to be an instance of passive immunization in the strictest sense of the term. The antibody values of the blood are recorded in table 1.

TABLE 1.—*Antibody Values of Blood in Case 1*

Day of Disease	Phagocytosis*
Third (before transfusion)	50-28%
Fourth (after transfusion)	199-84%
Eleventh	161-80%
Two months later	6- 8%

* There is no absolute index or maximal value that can be used as a standard to measure the antibacterial antibody. All observations are to some degree relative to previous observations except in those instances in which there is no phagocytic effect. In this and subsequent tables the observed phagocytic values are recorded as 50-28 per cent to state that fifty streptococci were phagocyted by 28 per cent of twenty-five polymorphonuclear leukocytes counted in series.

This case was diagnosed as subepithelial abscess and cellulitis of the thumb, lymphangitis, and axillary adenitis with toxemia. It has not been determined whether the absence of toxemia was attributable to an acquired immunity of the patient or a lack of toxinogenicity on the part of the streptococcus.

Certain very definite conclusions may be drawn from this case:

1. Lymphangitis may exist in the absence of "red streaks."

8. It is my belief that the diagnosis of lymphangitis may be made in the absence of the familiar "red streaks" by the demonstration of tenderness along lymphatic pathways and induration of the lymphatics. This lymphatic and perilymphatic thickening is more easily appreciated if grease is applied to the skin to reduce tactile friction. The erythema of the red streak is blanched when specific antitoxin is injected.

2. Antibacterial immunity may be passively transferred by immunotransfusion with apparent clinical benefit.

3. Hemolytic streptococci may survive and produce suppuration in lymph nodes even in the presence of a presumably effective blood stream immunity.

CASE 2.—Z. McB., a farmer, aged 43, had a plastic operation on the tendons of his hand two years after his original infection. On the sixth postoperative day there was an increase in the local induration and a few stitches were removed. On the seventh day there were red streaks up the arm without axillary tenderness. More stitches were removed and hot moist poultices were applied to the arm. On the evening of the eighth day

TABLE 2.—*Antibody Values of Blood in Case 2*

Time of Test	Phagocytosis*
Onset of infection	56-32%
After recovery	207-80%

* See footnote of table 1.

the patient developed a typical scarlatinal rash over his entire body. The lymphatic pathways of the arm were tender and indurated and there was a visible streak of cutaneous erythema. The erythematous skin was injected with normal horse serum and erysipelas antitoxin but only the latter produced persistent blanching. The patient's blood was found to be actively phagocytic for the hemolytic streptococcus obtained in pure culture from the operative wound. Blood cultures were taken and subsequently reported negative. High fever, rapid pulse and cutaneous erythema persisted. This case was interpreted as one of local wound sepsis with toxemia in the presence of a relatively high blood stream immunity to the bacteria. The deficient antibody to be supplied was clearly the antitoxin. This was done, with immediate fall in temperature and pulse rate and blanching of the rash.

The case is presented to illustrate two apparent facts:

1. Lymphangitis may exist in the presence of demonstrable antibacterial antibodies in the blood stream.

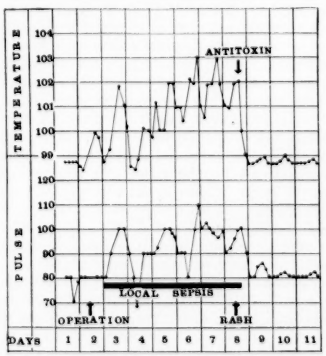

Chart 2.—Clinical course in case 2.

2. Toxemia may occur in the presence of demonstrable antibacterial antibodies in the blood serum, and it is in these cases that antitoxin alone produces clinically striking results.

CASE 3.—R. Z., a woman, aged 27, had a plastic operation performed on her hip. A persistent sinus developed in the operative scar. This subsequently became infected with hemolytic streptococci and the patient developed a rapidly spreading erysipelas of the lower half of the body. The blood contained

little antibacterial antibody and the presence of the rash of erysipelas indicated a lack of antitoxin immunity. An erysipelas antitoxin was selected on the basis of the blanching test and given intravenously. This blanched the rash, reduced the pulse rate, and changed the temperature curve from one of persistent elevation to one of the "picket fence" type. It was impossible to find a donor with an acquired immunity to this streptococcus and it was necessary to depend on local treatment of the

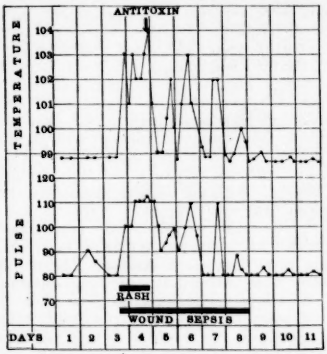

Chart 3.—Clinical course in case 3.

wound. This case illustrates the persistence of infection following the control of the toxemic manifestations alone. After recovery the patient's blood was found to contain antibacterial antibody (table 2).

This case illustrates two observations:

1. Antitoxin controls only the toxemic manifestations of the infection.

2. Recovery is correlated with the appearance of antibacterial antibody if it has not been previously supplied by immunotransfusion.

TABLE 3.—*Phagocytic Values of Eight Patients Before and After Immunotransfusion*

Patient	Lesion	Phagocytosis* Before Transfusion	Phagocytosis* After Transfusion
Bev.	Pneumonia and empyema	54-32%	300-96%
Cad.	Cellulitis and lymphangitis	50-28%	199-84%
Cen.	Chronic phagedenic ulcer	56-36%	275-92%
Cos.	Postbacteremic abscess	103-44%	147-84%
Goo.	Postbacteremic abscess	263-84%	308-100%
Had.	Bacteremia	14-10%	139-86%
One.	Bacteremia	30-28%	95-52%
Rin.	Bacteremia	4- 4%	202-90%

* See footnote of table 1.

Table 3 presents the observed phagocytic values of the blood of eight patients before and after immunotransfusion. There are as yet no quantitative standards to establish what constitutes a protective level of immunity, but in every case there has been an increase in the phagocytic activity of the patient's blood after transfusion. The clinical application of this method of passive antibacterial immunization is readily apparent.

COMMENT

An attempt has been made to differentiate between the septic (invasive) and toxic components of the clinical picture observed in hemolytic streptococcus infections. Clinical records have been presented to illustrate the manner in which specific cases may be evaluated.

1. *Septic Element of the Infection.*—Under this heading are grouped the signs and symptom complex resulting from bacterial proliferation and dissemination within the body:

1. Local cellulitis or abscess.
2. Lymphangitis.
3. Lymph node inflammation and suppuration.
4. Swinging "picket fence" temperature.
5. Chills.
6. Positive blood culture.

It has been previously reported [1] that the hemolytic streptococcus owes its invasiveness to its capacity to resist phagocytosis and that the essential type-specific antibacterial antibody is an opsonin capable of inciting specific phagocytosis. Recovery from infection has been correlated with the appearance of this antibody. A method has been described which permits the determination of a patient's serum opsonin content and the selection of a donor with a high degree of specific acquired antibacterial immunity. These tests require about four hours after the streptococcus has once been isolated in pure culture. It is proposed to use immunotransfusion to increase the bactericidal power of the body at the time of infection.

2. *Toxemic Element of the Infection.*—The toxemia of the early infection is characterized by signs and symptoms that are attributable to the dissemination of the erythrogenic toxin:

1. Cutaneous erythema.
2. Sustained elevation of the temperature.
3. Persistently rapid pulse.

Therapeutically potent antitoxins for most cases may be selected by the Schultz-Charlton test of specific blanching. It is to be emphasized that antitoxin should be expected to be effective only in blanching the rash and lowering the temperature and pulse rate.

3. *General Considerations of Immune Serum Therapy.*—The clinical course of early, rapidly progressing hemolytic streptococcus infection appears to have been favorably modified by the use of antitoxin for toxemia and immunotransfusion for the passive transfer of antibacterial immunity when necessary.

The evaluation of the antibacterial immunity of infected patients and the experience with immunotransfusions has disclosed one fact very clearly. Hemolytic streptococci may persist in local lesions and in lymphatic pathways even though the blood serum contains a high concentration of antibacterial antibody. Immunotransfusion has been found to clear the blood stream of patients with bacteremia for varying periods of time but it has not prevented the later development of abscesses, particularly in the afferent lymphatic channels. Antibacterial therapy appears to halt the general spread of the invading organism and in its perfected form may simplify the problem of streptococcus invasion by making it primarily one of the management of localized areas of infection.

CONCLUSIONS

1. Hemolytic streptococcus infections are of three clinical types: septic, toxemic, or both septic and toxemic.

2. The septic manifestations of the rapidly progressive infection are best combated by transfusion from donors having a high specific antibacterial immunity.

3. The toxemic manifestations are best combated by antitoxin plus antibacterial antibody.

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THE PREVALENCE OF MILD BRUCELLA ABORTUS INFECTIONS

REPORT OF A CASE

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NEW YORK

In the last few years the profession has become increasingly conscious of the prevalence of undulant fever. But I do not think it has yet realized how common the subclinical and ambulatory forms may be. I hazard the opinion that many such cases may masquerade under the guise of infectious arthritis, nervous exhaustion, undiscoverable focal infection, and chronic neutropenia.

PREVALENCE

Until recent years the specific agglutination tests have been considered the sine qua non for the presence of brucella infection. It is now known that negative agglutinins may be of little significance. From 5 to 16 per cent of the cases proved by cultures, skin tests and animal inoculation give negative agglutinins, and a low titer must be seriously considered in the diagnosis.[1] In addition, an astonishingly large number of persons give positive agglutinations with or without clinical symptoms. In 25 per cent of 1,000 routine Wassermann tests, low titer agglutinins for undulant fever were found and 0.3 per cent yielded a titer above 1:40.[2] Twenty per cent of the cattle in the United States are infected with Brucella abortus, and 40 per cent of these excrete organisms in their milk.[3] In 100 tests of epileptic patients drinking infected milk, 41 per cent yielded agglutinations of 1:10 or over and 45 per cent gave positive skin tests.[4] A careful checking of the physical examinations and temperatures showed that 22 per cent were mild ambulatory cases. In Alice Evans's[5] famous case lasting six years there were months of disability without a rise in temperature above 99.5 F. and other months of normal temperature.

Furthermore, the Brucella suis type can account for an epidemic from cow's milk,[6] and there are different strains of Brucella abortus varying in virulence, some of which are not even pathogenic for man.[7] Therefore, except for suis and certain virulent abortus strains, milk-borne Brucella infections are common but may be very mild or run a subclinical course, and in only a few cases are they typical of what one commonly calls undulant fever.

CLINICAL COURSE

Giordano[8] analyzed thirty-five cases. The chief symptoms were fatigue, anorexia, low fever, headache, muscular weakness and joint pains. The onset followed an infection of the upper respiratory tract or bronchitis. The course may be for weeks or years. The fever was not undulant but generally septic with remissions; occipital or cervical headaches were common. Backache and arthralgia of the small joints without redness or swelling were often the only symptoms of the disease. Eye aches, asthenia, irritability, depression and insomnia were common; constipation and gallbladder pains were frequent. The spleen is only rarely enlarged in the abortus type. The blood showed a leukopenia and a relative neutropenia. Simpson[9] summarizes ninety cases. The average duration was four months. Five per cent gave negative agglutinins. (He used animal inoculation, agglutination and skin tests for diagnosis.) The onset was insidious with an afternoon temperature, headache, and muscle and joint pains. Eighty-nine per cent had only one febrile attack early in the disease. Asthenia was the commonest symptom; the spleen was palpable in a third of the cases. Harris[10] has just studied, with many interesting observations, fifty-one cases occurring in general practice in a rural New York district. The majority of the cases were ambulatory, of long duration, and remissive in type. The fever was low grade; muscle and joint pains were the chief complaint, often suggesting a neurosis; there was a striking pallor without secondary anemia; he observed a leukopenia, a neutropenia and frequent alveolar abscesses.

DIAGNOSIS

Complement fixation tests run parallel to the agglutinations.[11] Blood cultures, requiring special mediums, are generally negative in the abortus type.[5] There is much dispute as to the value of low titers in the agglutination tests; 1:50 or 1:100 is considered diagnostic in most state laboratories,[12] but low titers of 1:10 or over are now being stressed in the diagnosis of the ambulatory cases.[13] The skin test should be a routine diagnostic procedure in all cases showing negative agglutinins. There are three types: the broth filtrate form has been dispensed with because of the possibility of a pseudopositive reaction;[14] a saline suspension of the killed organism gives accurate results but may cause a severe reaction and is always followed by a positive agglutination test thereafter.[15] Nucleoprotein fractions in saline, or fat-free alcohol extracts, of the brucella organism are now used by the majority; they probably give a much less general reaction, with equal specificity, and cause positive agglutinins thereafter in only 9 per cent of those tested.[16] The

From the New York Hospital.

1. Simpson,[9] Burnet, M. E.: New Diagnostic Procedure of Undulant Fever, Compt. rend. Acad. d. sc. **174:** 421, 1922.

2. Jordan, C. F.: Infection in Epidemiology of Undulant Fever in General Population and Selected Groups in Iowa, J. Infect. Dis. **48:** 526 (June) 1931. McAlpin, J. G., and Mickle, F. L.: Bacterium Abortus Infection in Man: Results of Agglutination Test Applied to More Than Ten Thousand Human Sera, Am. J. Pub. Health **18:** 609-613 (May) 19.8.

3. Traum, J.: Animal Infections with Bacteria of Genus Brucella and Their Relation to Undulant Fever of Man, Am. J. Pub. Health **20:** 935-942 (Sept. 30) 1930.

4. Johns, E. P.; Campbell, F. J. H., and Tennant, C. S.: Serological and Clinical Investigations of Individuals Exposed to Brucella Abortus, Canad. M. A. J. **27:** 490-497 (Nov.) 1932.

5. Evans, Alice: Chronic Brucellosis, J. A. M. A. **103:** 665-667 (Sept. 1) 1934.

6. Beattie, C. P., and Rice, R. M.: Undulant Fever Due to Brucella of Porcine Type—Brucella Suis: Report of Milk-Borne Epidemic, J. A. M. A. **102:** 1670-1674 (May 19) 1934.

7. Huddleson, I. F.: Differentiation of Species of Genus Brucella, Am. J. Pub. Health **21:** 491-498 (May) 1931.

8. Giordano, A. S., and Sensenich, R. L.: Brucella Abortus Infection in Man: Clinical Analysis of Thirty-Five Cases, J. Lab. & Clin. Med. **15:** 421-436 (Feb.) 1930.

9. Simpson, W. M.: Undulant Fever; Brucelliasis; Clinicopathologic Study of Ninety Cases Occurring In and About Dayton, Ohio, Ann. Int. Med. **4:** 238 (Sept.) 1930.

10. Harris, H. J.: Difficulties in Diagnosis of Undulant Fever: Preliminary Report of Fifty-One Cases, New York State J. Med. **34:** 1017-1021 (Dec. 1) 1934.

11. Carpenter, C. M., and Boak, R. A.: The Laboratory Diagnosis of Undulant Fever, J. Lab. & Clin. Med. **15:** 437 (Feb.) 1930. Sasano, K. T.; Caldwell, D., and Medlar, E. M.: Complement Fixation and Agglutination Tests for Brucella Abortus Infection, J. Infect. Dis. **48:** 576-580 (June) 1931.

12. Henry, B. S., and Traum, J.: Comparison of Factors Influencing Agglutination Test for Brucella Abortus, J. Infect. Dis. **47:** 367-379 (Nov.) 1930. Gentry.[10]

13. Simpson,[9] Harris.[10]

14. Giordano, A. S.: Brucella Abortus Infection in Man: Intradermal Reaction as Aid in Diagnosis, J. A. M. A. **93:** 1957-1958 (Dec. 21) 1929.

15. Giordano,[14] Favorite, G. A., and Culp, C. F.: Intradermal Test in Undulant Fever: Reactions in Healthy and Infected Individuals, J. Lab. & Clin. Med. **20:** 522-526 (Feb.) 1935.

16. Simpson,[9] Huddleson, I. F.; Johnson, H. W., and Haman, E. E.: Study of Opsonocytophagic Power of Blood and Allergic Skin Reactions in Brucella Infection and Immunity in Man, Am. J. Pub. Health **23:** 917-929 (Sept.) 1933. Henry and Traum,[12] Giordano and Sensenich,[8] Levin, William: Intradermal Test as Aid in Diagnosis of Undulant Fever, J. Lab. & Clin. Med. **16:** 275-281 (Dec.) 1930.

opsonocytophagic test, as developed by Huddleson, is interesting in determining whether the patient is susceptible, is infected or has recovered. It is an index of the specific phagocytic power of the patient's polymorphonuclears for the brucella organism and the results are clear cut.[17]

TREATMENT

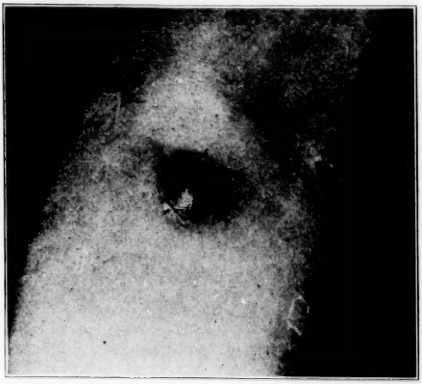
Good hygiene, as in tuberculosis, with rest, ultraviolet radiation and a high caloric-vitamin diet, continues the accepted treatment by those inclined to conservatism. "Brucellin," a culture filtrate developed by Huddleson, and Brucella abortus vaccine are coming more and more into favor. They are given subcutaneously in increasing doses at three day intervals starting with a minimal dose, with the expectancy of a generalized fever reaction. Excellent results have been obtained in early, and less frequently in chronic, cases.[18] Foreign protein injections are of questionable value.[9] Pyronine, thionin, mercurochrome and neoarsphenamine have their lone advocates.[19] To date horse serum sensitized by a culture filtrate has not been successful.[20]

REPORT OF CASE

I cite my own case of a mild ambulatory form of abortus infection without fever and with negative specific agglutinins. It is interesting to note the absence of those symptoms considered diagnostic of undulant fever. An extremely thorough work-up ruled out alternative organic diagnoses; but at various times it was diagnosed a psychoneurosis, undiscoverable focus of infection, and chronic neutropenic state.

A physician, aged 28, in the summer of 1934, after drinking raw cow's milk and eating goat cheese in Norway, developed periodic exacerbations of malaise, easy fatigability, and generalized muscle and joint pains. The onset was insidious, following heavy exercise and an infection of the upper respiratory tract. These exacerbations lasted from four to five days and continued for six months. At first they were almost constant, but gradually increasing periods of well being intervened. Fever was consistently absent, with 97 forenoon and 98.6 afternoon temperature readings. The physical examination was negative, but weight loss, constipation and marked pallor without secondary anemia were present. For six months good hygiene with rest, ultraviolet rays and a high caloric-vitamin diet was practiced. After this the patient commenced work again in New York and was without symptoms except when overfatigued. If this condition occurred, an exacerbation followed, consisting chiefly of muscle and joint arthralgias, especially wherever a previously strained joint existed, but without local redness or swelling. These attacks at present are becoming increasingly infrequent.

Exhaustive clinical, laboratory and roentgen studies were made. The past medical history was negative, including the sinuses, teeth and the respiratory gastro-intestinal and genito-urinary systems; there was no history of rheumatic fever or arthritis; sinus, teeth and chest roentgenograms were negative. Examination of the eyes, nose and throat was negative (the tonsils and adenoids being out); gallbladder and gastro-intestinal series, prostatic smear, urine, and throat culture were normal. Blood showed normal erythrocytes and hemoglobin but a constant neutropenia, at first running 39 per cent neutrophils of 5,200 leukocytes, and slowly improving to 50 per cent neutrophils of 6,500 leukocytes. The smear was normal. The blood sedimentation rate averaged 5 mm. in the first hour and 13 mm. in the second hour. The basal metabolic rate was —15. Blood cultures and serum agglutinations were negative for typhoid, paratyphoid and undulant fever. At the end of five months a skin test according to Giordano's technic using 0.1 cc. of Brucella abortus antigen of a saline killed suspension was given intradermally at the University Hospital, Philadelphia. Within forty-eight hours there followed a very marked local and general reaction with a fever of 101 F., malaise, arthralgia, slight lymphangitis, and locally a wheal measuring 2 inches by 1 inch, raised and red. This progressed into a sterile abscess, which necessitated incision and drainage three weeks later. The vaccine was rechecked for sterility and a culture of the abscess was taken and found to be sterile except for a nonpathogenic diphtheroid organism. For the duration of the abscess the previous symptoms were duplicated in an intensified form with an afternoon rise in temperature of from 1 to 2 degrees and following incision and drainage a complete cessation of all symptoms for one week. Three weeks after this Huddleson's opsonocytophagic test was done by Dr. Welch of the Connecticut State Laboratories with the finding of 100 per cent positive phagocytosis, indicating high resistance to the brucella organism. (The importance of this test is lessened because of the previous abscess formation with possible sensitization.) It is interesting to note that at this time the blood gave a slightly positive heterophil test for infectious mononucleosis, as is frequently found in undulant fever cases.[21]



Appearance of sterile abscess on inner aspect of forearm three weeks after a diagnostic skin test.

COMMENT

Here was a case of mild ambulatory brucella infection with normal or nearly normal temperature and negative agglutination titers, but markedly positive skin and phagocytic tests; with enough subjective symptoms to cause incapacitation, yet with little enough objective signs to cause a diagnosis to be made of neurasthenia, chronic neutropenia, and undiscoverable focal infection. This paper suggests one more substitute for that diagnostic wastebasket "neurasthenia and exhaustion states." It invites conjecture as to Brucella abortus contributing to the etiology of obscure arthritic conditions. It suggests that skin tests be done in all suspected cases of brucella infection showing negative specific agglutinins.

17. Huddleson, Johnson and Haman.[16] Meyer, K. F., and others: Brucella Phagocytic Index Test, Proc. Soc. Exper. Biol. & Med. **32**: 284-286 (Nov.) 1934.

18. Simpson.[9] Huddleson, Johnson and Haman.[16] Giordano and Sensenich.[8] Poppe, K.: Vaccination Treatment of Alcaligenes Abortus Infection in Man, Deutsche med. Wchnschr. **59**: 913-916 (June 16) 1933. Harris.[16] O'Neil, A. E.: Preliminary note on Treatment of Undulant Fever with Detoxified Alcaligenes Abortus Vaccine and with Antiserum, Ohio State M. J. **29**: 438-439 (July 1) 1933.

19. Gentry, E. R.: Undulant Fever, in Oxford Medicine, edited by Henry Christian, chapter 25, p. 801. Huddleson, I. F.; Johnson, H. W., and Haman, E. E.: Report of Bacteriologist, Annual Report of Diseases of Veterinary Science, Michigan State College, June 30, 1932, p. 42.

20. Personal communication of I. W. Huddleson to Dr. Paul Reznikoff, New York, May 1935.

21. Dr. H. L. Welch, Bureau of Laboratories, Connecticut State Department of Health, personal communication to the author, January 1935.

SUMMARY

Mild ambulatory cases of Brucella abortus infection are common. Because of the lack of objective signs and the presence of malaise, asthenia, and muscle and joint pains, they are often included in the category of neurotic, arthritic or cryptogenic infections. Laboratory diagnosis should include skin and possible phagocytic tests as well as agglutinations and cultures. The case cited clinically resembled a mild Brucella abortus infection. Exhaustive search failed to reveal any focus of infection. The fever and agglutinations were negative, but the skin and phagocytic tests were markedly positive.

525 East Sixty-Eighth Street.

OUTBREAK OF UNDULANT FEVER DUE TO BRUCELLA SUIS

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An outbreak of undulant fever occurred in an institution maintained for elderly persons in Connecticut during 1934-1935. There were fourteen clinical cases with three deaths. Blood cultures from two of the fatal cases were positive for Brucella suis. This organism was also isolated in pure culture from an abscess in the soft tissue overlying the sternum of a third patient. Epidemiologic, clinical and laboratory evidence supports the view that most of the Brucella infection of man in this section is due to the bovine strain.[1] This was the first outbreak reported in Connecticut due to the porcine organism.

The population of the institution consisted of 305 inmates and eighty-one employees. The case of a 13 year old boy was included because he used milk from the dairy herd maintained by the institution. Table 1 gives the population by age group and sex; table 2 gives data pertaining to each individual case.

TABLE 1.—*Population of Institution*

	Inmates		Employees		Totals		Grand Totals	
Age	Males	Females	Males	Females	Males	Females	Number	Per Cent
0- 9	0	0	0	0	0	0	0	0
10-19	0	0	1	3	1	3	4	1.04
20-29	1	0	7	26	8	26	34	8.81
30-39	1	0	4	18	5	18	23	5.96
40-49	3	4	4	9	7	13	20	5.18
50-59	13	9	2	7	15	16	31	8.03
60-69	37	28	0	0	37	38	75	19.43
70-79	48	72	0	0	48	72	120	31.09
80-89	31	41	0	0	31	41	72	18.65
90+	1	6	0	0	1	6	7	1.81
Totals	135	170	18	63	153	233	386	100.00

Table 3 analyzes the population, cases and case rate by age groups. Table 4 compares the percentage of population and cases under 50 years and over 50 years in the institution and in Connecticut as a whole.

The age distribution of the patients ranged from 13 to 82 years. Approximately 64 per cent of the patients were over 50 years of age. A study of 202 cases of undulant fever in this state shows that only 18 per cent of the patients were over 50 years of age.[2] This apparent difference is explained by the fact that 79 per cent of the institution's population were over 50 years of age, while it is estimated that only about 20 per cent of the population in the state as a whole are over 50 years of age. The attack rate for the total population of the institution was 3.63 per hundred. The attack rate for males was 3.9 and for females 3.4. The outbreak was too small for an analysis to be of statistical significance.

The symptomatology of the cases did not differ from observations recorded elsewhere for this disease. The onset was usually gradual and could not be determined with accuracy. In several cases one or more months elapsed after the last exposure to the source of infection before symptoms were noted. When questioned, the patient would often say that he had tired easily and had lacked strength for some time. Usually the onset was dated from the day of the first chill. Frequently, an early symptom was moderately severe headache, which might be either frontal or occipital. The temperature curve in all cases was of the undulating type. The maximum elevation of temperature usually occurred after 4 p. m. and was followed by a drop of from 2 to 3 degrees, with the maximum remission after 4 a. m. The outstanding symptoms were ease of fatigue, loss of strength, headache, fever, chills and perspiration. Four of the patients had symptoms referable to the upper respiratory tract early in their illness, and eight complained of mild gastric distress. The duration of the illness is given as from the time of onset until the day discharged from the hospital or date of death. It varied from four to forty weeks. Eleven of the patients recovered; three died.

Complications have occurred in only one case thus far, of a woman, aged 25. The onset was in April, and during June phlebitis of the left lower extremity developed. Later there was an abscess in the soft tissue overlying the sternum, which was excised. Brucella suis was isolated in pure culture from the abscess. Two elderly patients had chronic arthritis; these symptoms remained about the same during their illness.

Subclinical brucella infection frequently occurs. It had been hoped that blood could be secured from all the inmates in order to obtain some index as to the amount of subclinical infection. This was not possible. Blood was obtained from forty persons without symptoms. Fourteen, or 35 per cent, agglutinated Huddleson's antigen in low dilutions.

Case 4 was instructive. The onset of symptoms was early in August. A clinical diagnosis of undulant fever was made on August 7. Specimens of blood examined on August 7 and August 14 failed to agglutinate Huddleson's antigen. A specimen on August 21 partially agglutinated the antigen through dilutions of 1:200. A specimen on August 29 agglutinated the antigen through dilutions of 1:6,000. The patient had clinical symptoms of undulant fever for at least three weeks before evidence of the disease could be detected serologically. This case emphasizes the importance of repeated laboratory examinations in the presence of suggestive symptoms.

Epidemiologic investigation revealed two possible sources of infection. The institution maintained its own dairy herd and the milk was consumed raw. All the patients had been exposed to the milk as a food. The institution also kept swine. The hogs were butchered every two weeks during the winter, from November 1

From the Bureau of Preventable Diseases, State of Connecticut Department of Health, Millard Knowlton, M.D., director.

1. Gilman, H. L., and Milks, C. H.: Cornell Vet. **23**: 150 (April) 1933. Plastridge, W. N., and McAlpine, J. G. Brucella Abortus of Bovine, Porcine and Equine Origin, J. Infect. Dis. **49**: 127-134 (Aug.) 1931. Connecticut State Department of Health: Unpublished data.

2. Connecticut State Department of Health: Unpublished data.

to March 1. The pork was not kept in cold storage, as only enough was butchered each time to supply meat for two meals.

None of the patients had been near the swine and they had had no contact with the uncooked pork. Thirteen of the patients had eaten the cooked pork; one had not. Careful inquiry revealed the fact that all meat, especially pork, at this institution is thoroughly cooked. No evidence could be found to indicate that the disease had been contracted through contact with the swine or pork.

In the first case the onset apparently occurred in April 1934. It was diagnosed and reported on June 30, 1934. An immediate investigation was made by the state department of health. Raw milk from the institution herd was the only source of infection found. Following the usual procedure, information obtained was given to the state dairy and food commissioner.

The herd belonging to the institution consisted of thirty-six cows and one bull. Blood specimens from the entire herd were drawn under the direction of the state commission of domestic animals and examined at the Storrs Experiment Station. The blood from two of the cows was positive for brucella infection and the blood from a third was suggestive. The positive cows had been in the herd thirty and fourteen months; the third cow had been with the herd fourteen months. Pasteurization of the milk was begun Aug. 1, 1935. Unfortunately, the infected cows were disposed of before the milk could be examined for Brucella organisms.

It is unusual in Connecticut to have more than one case of undulant fever on a milk route. Early in this

TABLE 2.—*Undulant Fever at Connecticut Institution*

No.	Age	Sex	Onset, 1934	Agglutination Titer	Culture	Temperature Range, F.	Duration, Weeks	Occupation	Outcome
1	25	♀	April	1:6,000	Abscess B. suis	102	30	Waitress	Recovered
2	63	♀	July	1:6,000	.....	104	14	Inmate	Recovered
3	80	♂	July	1:6,000	Blood neg.	101.5	20	Inmate	Recovered
4	82	♀	Before Aug.	1:6,000	.....	104.2	40	Inmate	Died
5	69	♀	Aug.	1:6,000	.....	103.8	12	Inmate	Recovered
6	76	♀	Aug.	1:6,000	Blood B. suis	103.5	8	Inmate	Died
7	65	♂	Aug.	1:6,000	Blood B. suis	102.4	14	Inmate	Died
8	20	♀	Sept.	1:2,000	Blood neg.	102	12	Clerk	Recovered
9	76	♂	Sept.	1:6,000	.....	101.4	18	Inmate	Recovered
10	20	♀	Sept.	1:2,000	.....	99	12	Waitress	Recovered
11	71	♂	Sept.	1:6,000	Blood neg.	102.8	14	Inmate	Recovered
12	23	♀	Sept.	1:6,000	Blood neg.	102	12	Nurse	Recovered
13	13	♂	Nov.	1:6,000	.....	102	5	Schoolboy	Recovered
14	76	♂	Dec.	1:6,000	.....	102.2	74	Inmate	Recovered

outbreak Brucella suis was suspected as the etiologic agent, first because of multiple cases, and secondly because of the severity of the clinical symptoms. This suspicion was verified by the recovery of Brucella suis from the blood stream of two of the patients and from an abscess in the soft tissue overlying the sternum in another patient. As stated previously, the pork was thoroughly cooked, there had been no contact with the swine and one patient had never eaten the pork. Also, no hogs had been butchered later than March 1, 1934, and these cases all apparently had their onset of symptoms after April 1, 1934.

Considerable evidence has accumulated to show that cattle may become infected with Brucella suis, both experimentally and in nature.[3] Epidemiologic evidence suggested that this outbreak was due to drinking raw

TABLE 3.—*Population, Cases and Case Rate by Age Groups*

Age	Population		Cases		Case Rate Per 100 Population
	Number	Per Cent	Number	Per Cent	
0- 9	0	0.00	0	0.00	0.0
10-19	4	1.04	1	7.14	25.0
20-29	34	8.81	4	28.57	11.8
30-39	23	5.96	0	0.00	0.0
40-49	20	5.18	0	0.00	0.0
50-59	31	8.03	0	0.00	0.0
60-69	75	19.43	3	21.43	4.0
70-79	120	31.09	4	28.57	3.0
80-89	72	18.65	2	14.29	2.8
90+	7	1.81	0	00.00	0.0
Totals....	386	100.00	14	100.00	3.63

TABLE 4.—*Population and Patients Under and Over 50 Years*

	Institution		Connecticut	
	Per Cent Population	Per Cent Cases	Per Cent Population	Per Cent Cases
Under 50 years.....	20.98	35.71	80	81.68
Over 50 years.....	79.02	64.29	20	18.32

milk from cattle infected with the swine variety of Brucella. The hogs' pens at this institution were located near the dairy barns. On their way to pasture the cows loitered around the pens and ate grass. It is possible that this was the method of infection. On the other hand, one of the cows might have been infected before joining the herd. Blood was drawn from thirty-two of the swine. Nine were positive, seven suggestive and sixteen negative for Brucella infection. The strain was not identified from the swine. It is assumed, however, that it was Brucella suis, as Brucella abortus has not been reported as occurring in swine.

SUMMARY

1. An outbreak of undulant fever with fourteen cases and three deaths occurred in a home for elderly persons.

2. Raw milk from the institution herd was the only source of infection found.

3. The herd consisted of thirty-six cows and one bull. The blood from two cows was positive and from another suggestive for Brucella infection.

4. Brucella suis was isolated from the blood of two patients and from an abscess of a third patient.

5. Blood was drawn from thirty-two swine kept by the institution. Nine were positive and seven suggestive for Brucella infection.

6. The cattle had opportunity for natural infection from the swine.

7. Epidemiologic evidence suggests that the outbreak was due to Brucella suis received from drinking raw milk from cows infected with Brucella suis from swine.

3. Beattie, C. P., and Rice, R. M.: Undulant Fever Due to Brucella of the Porcine Type—Brucella Suis, J. A. M. A. **102**: 1670-1674 (May 19) 1934. Gilbert, Ruth, and Coleman, Marion B.: Undulant Fever in New York State, J. Infect. Dis. **54**: 305-312 (May-June) 1934. Gilman and Milks.[1] Graham, R., and Thorp, F.: N. Am. Vet., Jan. 13, 1932. Huddleson, I. F.: The Differentiation of the Species of the Genus Brucella Undulant Fever Symposium, Tr. A. P. H. A., 1929, pp. 18-24. Plastridge and McAlpine.[4]

FOOD POISONING FROM ICE CREAM ON SHIPS

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The heterogeneous factors usually involved in outbreaks of "food poisoning," more especially the vehicular food, the numbers of persons affected, the delayed reporting of the incident to the health authorities and, particularly, the causative bacteria responsible, constitute a problem that too frequently does not lend itself to easy solution. Much of the information obtained has to be discarded since it is irrelevant to the solution of the problem by accepted epidemiologic technic. As an added complication, the problem is not infrequently confused by the lack of agreement between data obtained by direct epidemiologic methods and data obtained by bacteriologic study; or specimens of the incriminated food and of feces and urine from the affected individuals even may not be available for bacteriologic investigation.

Ice cream, as a possible and potential vehicle for the causative factor in food poisoning, offers particular difficulty since there is no uniformity or standardization of procedures and practices. In some instances, for example, the mix is heated to the boiling temperature, while in others pasteurization temperatures may be used and the time interval may be left to the judgment of the operator, with the result that this factor has wide variability. In other instances the freezing process is applied without any attempt at minimizing the bacterial growth by the application of heat to the mix beforehand. It is a recognized public health fact that ice cream mixtures containing milk, which in itself may show a high bacterial colony count and which may be contaminated through possible mishandling and human contact, nuts and fruits, the whole being mixed in utensils not adequately cleaned or sterilized, offers ample and rich opportunities to enhance bacterial metabolism to the end that the ingestion of the product may cause food poisoning; and the probability of this ultimate conclusion from such a series of events is markedly increased if the mixtures are allowed to stand, even for short periods of time, at room temperatures.

The occurrence of at least four outbreaks of food poisoning, epidemiologically traceable to ice cream containing nuts, occurring aboard an ocean liner sailing from the port of San Francisco, led to an investigation of the circumstances surrounding the manufacture, storage, handling and serving of ice cream aboard the vessel. A brief report covering the outbreaks and their background and of the study made subsequently may be of interest.

In the first of the four outbreaks referred to, fifteen passengers and an indeterminate number of the members of the crew were affected Jan. 8, 1935. The illness, in which the symptoms and signs presented included nausea, vomiting, abdominal distress (cramps), diarrhea and in some instances numbness of the extremities, had an incubation period of from three to eight hours and the duration was usually less than twenty-four hours. The food common to all those affected was chestnut ice cream, made aboard ship of milk, cream, eggs and canned chestnuts in syrup. Samples of ice cream and chestnuts were not available for laboratory study at the end of the voyage, but examinations were made of milk, cream and water. The laboratory reported bacteria colony counts per cubic centimeter for the various specimens: milk, 23,000; cream, 210,000; water, 45, at 37 C. and 65, at room temperature with B. coli absent in all tubes.

An inspection of the ship's galley, made on arrival in San Francisco, resulted in the correction of a few irregularities in food-handling practice, but no irregular circumstance detected was of sufficient magnitude to account for the occurrence of food poisoning. In the conduct of the study, the examination of the silver polish used, for cyanide, and of the insecticides used, as for fluorides, were unproductive of relevant information.

In the other outbreaks, on April 4 or 5, 7 and 17, thirty-eight people were affected, under circumstances very similar to those described in the first outbreak, with the common food factor in hazelnut ice cream. After the second outbreak of April 4 or 5, definite orders were given that the nut-containing ice cream must not be served, but these orders were not obeyed, and hazelnut ice cream was again served on two occasions, April 7 and 17, with approximately thirty people affected. Laboratory studies were made on specimens of hazelnut ice cream obtained at the end of the voyage from the ship surgeon and directly from the hardening room. All three specimens showed bacteria colony counts in excess of 5,000,000 per cubic centimeter of the original material, with profuse growth of a nonhemolytic staphylococcus (aureus) and not a few colonies of the coli-aerogenes group, but in no instance was there evidence of the presence of members of the paratyphosus group of organisms and, likewise, no evidence of chemical poisons. Specimens of excreta from the individuals affected were not available for bacteriologic study.

On the basis of these incidents it was believed advisable to place a trained observer aboard the ship so that observations might be carried out under the conditions actually existing during the voyage. The observations made and the information obtained from various sources, including members of the crew, revealed the facts that the utensils used in the manufacture of ice cream were not properly cleaned and sterilized and that ample opportunity was afforded for contamination of the ice cream before, during and after freezing and during the holding of the finished product. It was found that preparation of the mix and its freezing were carried on in the galley itself, rather than in a separate room equipped for the purpose, with the result that other employees had contact with the utensils and the food product. Not infrequently employees were found to have the habit of dipping their fingers into the mix, thereby tasting and contaminating the product. On one occasion during the voyage, ice cream was prepared in the freezer before the latter was even washed or cleaned (not to mention sterilization), following the previous freezing, all on account of a lack of fixation of responsibility for cleaning and sterilization of the freezer and other ice cream manufacturing equipment. In fact, no steam hose connections were available for proper cleaning and sterilization of equipment.

An investigation of the quality of the ingredients used and of the conditions under which they were stored revealed some interesting possibilities also; for example, nuts were stored in a room in which the dry

bulb temperature frequently reached the level of 98 F. and in which the mean temperature approximated 80 F. throughout the voyage. In spite of the fact that relatively high prices were being paid, examination showed that the stock on hand was of inferior grade.

The laboratory studies offer confirmatory evidence of the importance of these circumstances. Two specimens of the hazelnut ice cream made aboard ship, one submitted through the ship surgeon, the other obtained by an inspector at the end of the voyage, showed excessively high bacteria colony counts (54 and 51 million per cubic centimeter respectively) with Staphylococcus aureus the predominant organism (about 50 per cent). Cultures for B. typhosus, B. paratyphosus (alpha and beta) and B. dysenteriae were negative in both instances. The specimens of shoreside ice cream (shipped at the beginning of the trip) taken during the voyage, when the observer-inspector was aboard, showed lower bacteria colony counts; sample from hardening room (four days at sea), 3,500 colonies per cubic centimeter; sample after portions had been served from the supply, in the galley, 2,100 colonies per cubic centimeter; sample taken on return to San Francisco (originally shipped aboard at the beginning of the trip), 2,400 colonies per cubic centimeter. Specimens of feces from the food handlers involved were examined for B. typhosus, B. paratyphosus (alpha and beta), B. dysenteriae and other members of the paratyphosus-enteritidis group but were found to be negative in all instances. Specimens of drinking water were found to have high bacteria colony counts (500 and 750 at 37 F. and 1,000 and 500 at room temperatures), but these were negative for B. coli. None of the food poisoning (paratyphosus-enteritidis) group of organisms or staphylococci were found in the hazelnuts themselves or in the latter samples of ice cream, and the silver polish reacted negatively to the chemical tests for cyanide.

As a result of the investigations and observations described, certain of these conditions were corrected, the manufacture of ice cream aboard ship was discontinued, and the ice cream served to the passengers and crew was limited to that purchased and shipped aboard from inspected and controlled manufacturing plants located in ports of call ("shoreside" sources). Since the institution of these changes, there have been no further outbreaks of food poisoning aboard this vessel.

COMMENT

Although food poisoning has been traced to many different types of foods, milk and milk food products because of their inherent character certainly offer very favorable possibilities as the vehicular foods transferring the causative factors of food poisoning and certain transmissible diseases from their sources in man or animal to man. Even though it has been definitely proved on a number of occasions that many of the responsible organisms in these disorders withstand low temperatures and remain viable and capable of producing the disorder under ordinary circumstances, apparently there are still those who believe that freezing destroys microscopic organisms and renders the frozen food product medium sterile, innocuous and safe for the consumer. It is obvious, however, to those who are interested in food poisoning and its prevention, and to those who are interested in food preservation, that the solution of the problem, so far as ice cream and other milk food products are involved, lies in the same methods that have been used to solve the problem in fluid market milk and in other foods and food products; namely, standard quality ingredients, cleanliness, appropriate sterilized equipment, proper use of heat (at 142-145 F. or higher temperatures for at least thirty minutes), sterile containers and refrigeration, as indicated or required. It must be realized by health officials as well as by the industry itself that low temperatures, as within the range of ordinary refrigeration and even very low temperatures in many instances, can be relied on only as inhibiting growth and multiplication of bacteria and certainly not as a method to destroy the organism present. It is essential, therefore, that every safeguard be utilized in the manufacture of ice cream and all other milk food products, with the same rigorous supervision and high standards that obtain in the production, processing and marketing of high grade pasteurized market milk. Health officials will do well constantly to emphasize the importance of proper methods and the establishment of adequate safeguards.

SUMMARY

1. Interesting outbreaks of food poisoning, epidemiologically traceable to nut ice cream, occurred rather frequently aboard a large ocean liner sailing from San Francisco.

2. Laboratory studies revealed excessively high bacteria colony counts in specimens of the epidemiologically incriminated nut ice cream. The cultures showed Staphylococcus aureus, which may have been the causative factor, to be the predominant organism.

3. Investigations made by an observer-inspector, aboard for a regular trip, revealed many possibilities of contamination of the milk food product, which was made aboard ship.

4. The correction of certain undesirable practices and the use of ice cream from shoreside sources have resulted in no recurrence of food poisoning aboard this vessel.

CONCLUSION

Since the lower temperatures used in ordinary refrigeration and ice cream freezing have only growth-inhibiting and not bacteria-destroying power, and since milk and milk food products, because of their inherent character, offer excellent bacteria culture medium possibilities, ice cream and other milk food products should be subject to rigorous standards in production, processing and marketing, with the provision of every reasonable safeguard to the public health.

101 Grove Street.

The Four Hundred Eggs.—All the eggs which are to be used throughout the woman's reproductive life are present in her ovaries at birth, and even before this. Not only that, but nature gives her an enormous reserve supply, for each ovary starts out in life with a supply of something like 100,000 of these ova, far more than can ever be used for purposes of possible conception. As a matter of fact, since only one egg is ordinarily given off during each menstrual cycle, and since the average duration of the woman's menstruating life is about thirty-two or thirty-three years, not much more than 400 eggs are actually extruded from the ovary and are thus exposed to the possibility of fertilization by the male germ cell, and only one of five hundred ova achieves admission to this aristocratic four hundred. With the male, nature is even more prodigal in her factor of reserve, for each ejaculation of the male semen, i. e., the amount of semen given off by the male in intercourse, contains about 226,000,000 spermatozoa. And yet only one of these is necessary for fertilization.—Novak, Emil: The Woman Asks the Doctor, Baltimore, Williams and Wilkins Company, 1935.

Clinical Notes, Suggestions and New Instruments

EMPHYSEMA OF THE CECUM

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There have been relatively few cases of intestinal emphysema reported in the literature. Those which have been reported have been associated either with an acute inflammatory process as a result of infection of the intestinal tract, or with injury or some congenital abnormality in conjunction with an inflammatory process. Mackenzie [1] in 1894 reported a case of emphysema of the jejunum. Numerous vesicles of air were found in the submucous tissue and the whole mucous membrane was congested. Hemorrhage into the intestine had taken place and no cause could be found. The patient had acute and chronic pulmonary tuberculosis, but there were no signs either of ulceration or of tubercles in the intestine. Nitch and Shattock [2] in 1919 reported two such cases. These authors attempted without success to place the etiology of their cases and made extensive studies. The possibilities suggested and ruled out by them were as follows: (1) bacterial infection by B. aerogenes, B. oedematiens, B. oedematis-maligni or B. coli; (2) gas secretion from the tissue lymph; (3) osmosis, and (4) trauma, either mechanical injury or ulcer or perforation. Twyman [3] in 1919 reported a case of emphysema of the cecum and believed it to be due either to the obstruction that he found or to bacterial infection. Lohr [4] in 1929 reported a case and showed it to be the result of a secondary gas edema of the stomach and bowel due to an infection with the para-anthrax bacillus.

REPORT OF CASE

F. C., a man, aged 29, a mechanic, admitted to the hospital, Jan. 23, 1934, had consulted a physician one year before because of stomach trouble, the complaint being gas and bloating in the upper quadrant of the abdomen, with moderate distress. He stated that he was always hungry and could eat any time of the day. At that time the condition was diagnosed as ulcer of the stomach. The distress continued to occur practically every day for a year. Alkaline powders were prescribed, which seemed to relieve the pain and hunger sensations, the symptoms recurring whenever the powders were discontinued. After several months the symptoms in the upper part of the abdomen disappeared, but the patient still had gas and flatulence.

Three days before admission to the hospital he was seized with a severe attack of pain in the right lower quadrant, which after a few hours radiated all over the abdomen and caused him to double up. There was no nausea and no vomiting. He had chills and thought he had a fever on the first day. The pain and rigidity continued up to the time of admission to the hospital. The patient was well developed and apparently in acute distress. The physical observations were negative except for marked tenderness and rigidity of the right lower quadrant of the abdomen. The blood pressure was 120 systolic, 70 diastolic. The temperature was not elevated. Examination of the urine showed a specific gravity of 1.030, an alkaline reaction, and no albumin, sugar, pus or casts. The blood count showed a hemoglobin of 80 per cent, 4,800,000 erythrocytes and 13,100 leukocytes. The differential blood smear revealed 22 per cent lymphocytes, 4 per cent large monocytes, 5 per cent transitionals, 64 per cent neutrophils and 4 per cent eosinophils.

Operation was performed by Dr. R. B. Malcolm. A right rectus incision was made, the anterior sheath was opened, the muscle was displaced laterally, and the posterior sheath was opened. When the peritoneal cavity was entered, no fluid was found. Exploration showed a thickening of the medial and lateral areas of the ascending colon, commencing just distal to the ileocecal valve and extending distally for a distance of about 10 cm., beginning and ending abruptly. On palpation this thickened area was crepitant and felt exactly like lung tissue. There was no inflammation except a slight hyperemia, and no peritonitis. The appendix was normal. Exploration of other abdominal contents revealed nothing abnormal. Appendectomy was done. There was no odor and no evidence of perforation. There were simply air vesicles of the subserosa. Longitudinal incisions were made on each side, and the air escaped. Two lymph nodes were removed for culture. The air seemed not to invade the subserosa on the anterior surface of the colon but remained in the mesenteric portion, apparently coming from behind and partially encircling the bowel.

Twenty months later, in August 1935, the patient returned for further observation. The only complaint at this time was occasional slight constipation and a moderate degree of flatulence. There were no other gastro-intestinal symptoms. Physical examination was negative. The systolic pressure was 108, diastolic 68. A blood count showed: hemoglobin, 90 per cent; erythrocytes, 4,890,000; leukocytes, 8,400; lymphocytes, 25 per cent; large monocytes, 6 per cent; transitional cells, 1 per cent; neutrophils, 66 per cent; eosinophils, 2 per cent.

COMMENT

I have been unable to find in the literature any cases in which the physical signs and symptoms pointed toward an acute inflammatory process and in which a true emphysema, before death, was found in the absence of injury, congenital abnormality or noticeable infection. In this case a pinpoint rupture of the intestine was considered at the time of operation, but nothing was found that substantiated this view. There had been no history of the taking of enemas. Cultures from the sites of the air blebs were negative. As stated, the appendix was removed and found to be normal. A careful examination of the stomach and gallbladder was made, in view of the early suspicion of possible ulcer or gallbladder infection, and there was no evidence of either past or present stomach or gallbladder disease. The question of a vasomotor disturbance based on allergy was also considered. A careful inquiry was made as to any previous history of allergy, with negative results.

CONCLUSIONS

This case we believe to be a true emphysema of the cecum, uncomplicated by inflammation, trauma or congenital abnormality, and without any known etiology.

30 North Michigan Avenue.

1. Mackenzie, H. W.: Tr. Path. Soc. Lond. **46**: 61, 1894.
2. Nitch, C. A., and Shattock, S. G.: Proc. Roy. Soc. Med. **12**: 46 (Sect. Path.) 1919.
3. Twyman, E. D.: Emphysema of the Cecum, J. A. M. A. **73**: 1840 (Dec. 13) 1919.
4. Lohr, W.: Arch. f. klin. Chir. **155**: 188, 1929.

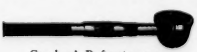
Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT. HOWARD A. CARTER, Secretary.

COPELAND REFRACTASCOPE ACCEPTABLE

Manufacturer: Bausch & Lomb Optical Company, Rochester, N. Y. Distributors: Riggs Optical Company, Chicago.

The Copeland Refractascope is a modified, self-luminous retinoscope, in which is incorporated a special electric bulb operating on 2 7/10 volts, constructed with a special filament, bent to produce a linear source of light. According to the firm, the filament does not bend when used but may bend if the instrument is accidentally jarred or falls to the floor. The lamp socket into which this bulb is fitted is incorporated in a movable bakelite support. It can be rotated through a 180 degree arc and moved to or from the condensing lens in the head of the instrument.



Copeland Refractascope.

On the outside of the handle of the instrument is a sleeve, connected directly to the bakelite lamp support by means of a screw, which places the control of the rotation and movement of the lamp by the operator in a convenient position.

The movement of the source of light to or from the condensing lens changes the angularity of the rays reflected from the mirror in the instrument, causing them to become divergent and convergent. Thus, when the sleeve is at the bottom the rays are most convergent and cross at a point approximately

9 inches in front of the instrument, producing a "concave mirror effect." The sleeve at its highest position causes the rays to be divergent, which produces a "plano mirror effect."

The Copeland Refractascope was tested by an investigator for the Council. He reported the instrument as satisfactory.

In view of the foregoing, the Council on Physical Therapy voted to include the Copeland Refractascope in its list of accepted devices.

Council on Pharmacy and Chemistry

REPORTS OF THE COUNCIL

CERTAIN MANUFACTURERS HAVE SENT ADVERTISEMENTS TO THE MEDICAL PROFESSION SUGGESTING THE USE OF VITAMIN A IN THE PREVENTION OF AND EVEN IN THE TREATMENT OF RENAL CALCULI. SINCE THIS ISSUE HAS BEEN RAISED UNNECESSARILY, THE COUNCIL FELT IT ADVISABLE TO PUBLISH A REPORT ON VITAMIN A AND URINARY LITHIASIS. THE FOLLOWING REPORT HAS THEREFORE BEEN AUTHORIZED BY THE COUNCIL FOR PUBLICATION.

PAUL NICHOLAS LEECH, Secretary.

VITAMIN A AND URINARY LITHIASIS

Urinary calculi were known in remote antiquity and have been studied as to cause and treatment throughout many centuries.[1] Most of the possible or likely etiologic factors have been given serious consideration and support by different investigators at various times. Many lectures, reviews and treatises [2] on this phase of the subject have been published. Among the most important of the factors suggested are heredity;[3] climate;[4] restriction of the amount of water and its composition (the indirect influence of soil);[5] food;[6] infection, both focal, with remote effects in the urinary system,[7] and direct, local;[8] other noxious agents,[9] and urinary stasis.[10] Some of these views are hardly susceptible of proof[11] and other views have been definitely opposed, as, for example, the view that focal infection[12] or local infection[13] is the primary agent or even that they play any part in the process.[14] The problem must therefore still be considered unsolved. That some abnormality of diet, for example, excess of mineral elements, improper balance of its constituents, especially the inorganic elements, presence in it of some special stone producing substance or other conditions affecting the diet might be the cause has been considered for a long time. The idea, however, that a specific deficiency of the diet might be the cause is relatively recent and is the direct outcome of observations and experiments made on animals.[15]

Since the first mention,[16] in 1910, of the occurrence of urinary calculi in the rat, much work has been done to determine their origin and mode of formation in this animal, partly at least in the hope that any knowledge so gained might throw light on the cause and mechanism of the formation of stones in man. Osborne and Mendel[15] in 1917 were the first to draw attention to the probability that a deficiency of a vitamin may be, at least indirectly, responsible for the formation of phosphatic urinary calculi in the rat. Their experimental diets were very deficient in what are now known as fat soluble vitamins A, D and E, by no means rich in the water soluble vitamins B and G, and entirely deficient in water soluble vitamin C. At that time they suggested that the calculi might be due, indirectly, to the effect of a deficiency of the fat soluble group of vitamins. Although many of the investigators who have repeated and confirmed this work have narrowed the effect down to vitamin A,[17] this conclusion was unjustified, because the diets which they used were the same as or similar to those used by Osborne and Mendel, or in certain instances even more deficient in some respects. Some investigators who have used the same or similar diets have been cautious and have concluded that deficiency of vitamin A probably played a part in the production but was not the exclusive cause of the calculi which they observed.[18] Bliss, Livermore and Prather[19] are the only investigators whose experiments justify their conclusion that deficiency of vitamin A alone can induce the development of urinary calculi in rats. For the rat, their diet was deficient in vitamin A alone. But other investigators who have also used a diet deficient only in vitamin A have not observed the formation of calculi, and, what is more important in this connection, investigators[20] have observed the formation of calculi in rats fed on diets that contained vitamin A in abundance. These investigators concluded that a general deficiency of the diet, with an absolute or relative excess of calcium, as compared with phosphorus, was the cause of the formation of the calculi which they found. McCarrison[21] found that the addition of vitamin A or of vitamins A and D to a diet deficient in vitamins A and D, with a disturbed balance of calcium and phosphorus, reduced the incidence of calculi but did not prevent their formation. He concluded that the administration of vitamin A played an important but not an exclusive part in the prevention of calculi composed of calcium carbonate and calcium hydroxide, which otherwise occurred with great frequency in rats fed on the diet mentioned.

That deficiency of vitamins A and D together is a sufficient condition for the initiation of the changes that lead to the formation of urinary calculi in the rat can be accepted on the basis of the work done by those investigators who claim that the effect is due to deficiency of vitamin A alone,[22] whose diet, however, was deficient in both vitamins A and D. This conclusion can also be accepted by those who do not commit them-

1. Joly, J. S.: Stone and Calculous Disease of the Urinary Organs, St. Louis, C. V. Mosby Company, 1929, p. 83. Joly,[4] Ravich, A.: Critical Study of Ureteral Calculi, J. Urol. **29:** 171 (Feb.) 1933. Shattock, S. G.: A Prehistoric or Predynastic Egyptian Calculus, Tr. Path. Soc. London **58:** 275, 1905.

2. Bliss, Livermore and Prather.[19] Counseller, V. S., and Priestley, J. T.: The Present Conception of Renal Lithiasis, J. A. M. A. **104:** 1309 (April 13) 1933. Fowler, H. A.: Stone in the Urinary Tract, M. Ann. District of Columbia **4:** 93 (April) 1935. Funk, Casimir: The Vitamines, Baltimore, Williams and Wilkins Company, 1922, p. 393. Joly,[4] Joly.[4] Keyser.[11] Keyser, L. D.: Recurrent Urolithiasis: Etiologic Factors and Clinical Management, J. A. M. A. **104:** 1299 (April 13) 1935. Ravich.[1] Wesson, M. B.: Urinary Calculi, Cause and Treatment, California & West. Med. **42:** 258 (April) 1935.

3. Friedenwald, Julius, and Ruhrah, John: Diet in Health and Disease, Philadelphia, W. B. Saunders Company, 1925.

4. McCarrison, Robert: The Causation of Stone in India, Brit. M. J. **1:** 1009 (June 13) 1931.

5. McCarrison,[4] Rost, F.: Ueber Blasen- und Nierensteure im Tiernersuch, Arch. f. klin. Chir. **162:** 701, 1930.

6. Friedenwald and Ruhrah.[3] Joly, J. S.: The Etiology of Stone: The Ramon Guiteras Lecture, J. Urol. **32:** 541 (Dec.) 1934. McCollum and Simmons.[32]

7. Keyser.[24] Rosenow, E. C., and Meisser, J. G.: Nephritis and Urinary Calculi After the Experimental Production of Chronic Foci of Infection, J. A. M. A. **78:** 266 (Jan. 28) 1922: The Production of Urinary Calculi by the Devitalization and Infection of Teeth in Dogs with Streptococci from Cases of Nephrolithiasis, Arch. Int. Med. **31:** 807 (June) 1923. Rosenow, E. C.: The Production of Urinary Calculi by the Devitalization and Infection of Teeth in Dogs with Streptococci from Cases of Nephrolithiasis: Summary of Results, Illinois M. J. **49:** 28 (Jan.) 1926.

8. Bliss, Livermore and Prather.[19] Hager and Magath.[20] Osborne, Mendel and Ferry.[15] The Rat and Its Relation to the Public Health.[16] Ravich.[1] Wells, H. G.: Chemical Pathology, Philadelphia, W. B. Saunders Company, 1925, p. 512.

9. McCarrison, Robert: The Experimental Production of Stone in the Bladder, Brit. M. J. **1:** 717 (April 16) 1927. McCarrison.[26] McCarrison.[4]

10. Bliss, Livermore and Prather.[19] Keyser.[11] Ravich.[1] Squier, J. B.: Calculous Diseases of the Kidneys and Ureters, in Lewis, Dean: Practice of Surgery, Hagerstown, Md., W. F. Prior Company, vol. 8, chapter 10.

11. Keyser, L. D.: The Etiology of Urinary Lithiasis, an Experimental Study, Arch. Surg. **6:** 525 (March) 1923.

12. Hryntshak, T.: Experimentelle Untersuchungen zur Harnsteinentstehung, Ztschr. f. urol. Chir. **40:** 211, 1935. Keyser.[11]

13. Keyser.[11] Perlman, S., and Weber, W.: Experimentelle Erzeugung von Blasensteinen durch Avitaminose, Deutsche med. Wchnschr. **54:** 1045 (June 22) 1928; Weitere Erfahrungen mit der experimentellen Blasenstein Erzeugung durch Avitaminose, München. med. Wchnschr. **75:** 2167 (Dec. 21) 1930. Ravich.[1] VanLeersum, E. C.: Vitamin A Deficiency and Urolithiasis, J. Biol. Chem. **76:** 137 (Jan.) 1928.

14. Hryntshak.[12] Rost.[5]

15. Osborne, T. B.; Mendel, L. B., and Ferry, Edna L.: The Incidence of Phosphatic Urinary Calculi in Rats Fed on Experimental Rations, J. A. M. A. **69:** 32 (July 7) 1917.

16. The Rat and Its Relation to the Public Health, Bull. 63, U. S. P. H. & M. H. S., 1910.

17. The references given in footnote 22, together with VanLeersum, E. C.: Vitamin A Deficiency and Urolithiasis, Brit. M. J. **2:** 873 (Nov. 12) 1927. VanLeersum.[18]

18. Counseller and Priestley.[2] Funk,[2] Gasparjan, A., and Owtschinnikow, N.: Zur Frage der Steinbildung im Organismus (Avitaminose und Steinbildung), Ztschr. f. urol. Chir. **30:** 365, 1930. McCarrison.[9] McCarrison, Robert: The Experimental Prevention of Stone in the Bladder in Rats, Brit. M. J. **2:** 159 (July 30) 1927. McCarrison.[24] McCarrison.[9] McCarrison.[21] McCarrison.[4] Perlman and Weber.[13]

19. Bliss, A. R., Jr.; Livermore, G. R., and Prather, E. O., Jr.: The Relation of Vitamin A and Vitamin D to Urinary Calculus Formation, J. Urol. **30:** 639 (Dec.) 1933.

20. Hager, B. H., and Magath, J. B.: The Formation of Vesical Calculi, J. A. M. A. **90:** 266 (Jan. 28) 1928. McCollum and Simmonds.[32]

21. McCarrison.[24] McCarrison and Ranganathan.[34] McCarrison.[20] McCarrison, Robert: Researches on Stone, Indian J. M. Res. **19:** 51 (July) 1931.

22. Fujimaki.[26] Higgins, C. C.: The Experimental Production of Urinary Calculi, J. Urol. **29:** 157 (Feb.) 1933; The Experimental Production of Urinary Calculi in Rats, Journal-Lancet **53:** 522 (Oct. 1) 1933; id. Urol. & Cutan. Rev. **38:** 33 (Jan.) 1934. Higgins.[43] Higgins.[33] Saiki.[46]

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selves [23] definitely to the idea that vitamin A alone is responsible but whose work shows that there was a deficiency of both A and D. Since the addition of phosphate (to balance the calcium and phosphorus in McCarrison's [24] diet) failed to prevent stone formation, although it reduced the incidence, this also shows that the diet which was now deficient only in vitamins A and D induced the formation of calculi. However, McCarrison [25] hypothecated the existence of some additional unknown stone producing agent in the cereal used in the diet. Practically all investigators are agreed that calculi do not occur in rats or dogs fed on a diet in which the inorganic elements are balanced and which contains an adequate amount of vitamins A and D.

That deficiency of vitamin A alone is a sufficient condition for the formation of urinary calculi in the rat cannot be accepted without reservation. To establish this beyond question will require further experiments like those of Bliss, Livermore and Prather,[19] in which rats and other animals are fed synthetic diets complete in all respects except for a deficiency of vitamin A. The small amount of experimental work done in this connection on the dog [26] has served to show merely that dietetic deficiency may play a part in the formation of calculi.

That dietetic deficiency plays a part has been suspected and suggested for man also, but, in this country at least, the existence of a serious deficiency of vitamin A in the diet of human beings with urinary stones has certainly not been demonstrated. It would be much easier to make a case for deficiency of vitamin D. The mere fact that urinary calculi are much less common, especially in children, than they were a century ago does not prove that vitamin A deficiency was the cause and that the more abundant use of sources of this vitamin has accounted for the decreased incidence. There have been so many changes in diet and general hygiene in that period that it is hardly fair to single out vitamin A without more adequate evidence. The report of Padua [27] pointing out the occurrence of cystolithiasis among Filipinos merely shows the probable effect of general dietetic deficiency and not that of one single vitamin. As a matter of fact he attempted to show some correlation with the occurrence of beriberi, which is due to a deficiency of vitamin B. All this is both pertinent and important, because it indicates the danger of applying to man what is not yet fully established for animals.

That deficiency of vitamin A is a necessary condition for the formation of stones in the urinary tract of the rat is certainly not established. Indeed, there is good evidence to show that this is not the case. By giving excess of magnesium carbonate, Watchorn [28] succeeded in inducing the formation of urinary calculi composed of calcium and magnesium phosphate in rats fed on a diet that contained an abundance of vitamin A and was otherwise complete in all respects for this animal. McCarrison,[29] Ranganathan [30] and Grossmann [31] also showed that calculi occurred in rats fed on a diet containing vitamin A or vitamins A and D, with an excess of calcium and insufficient phosphorus. McCollum, Simmonds and Becker [32] observed urinary calculi in many rats fed on diets containing an abundance of vitamins A and D and an excess of calcium. Ebstein and Nicolaier [33] and Keyser [34] found urinary calculi in rabbits and dogs fed on a supposedly normal diet to which was added oxamid, a crystalloid foreign to the urinary tract. Since they did not give details of the composition of the diet they used, there is no assurance that it contained an adequate amount of vitamins A and D.

If deficiency of one or more vitamins is responsible for the building of stones in the urinary tract of the rat, how does it produce this effect? Many of those who believe that deficiency of vitamin A alone can do it, and those who believe it plays a part, have suggested two main methods, which may act in combination: 1. The calculi form because deficiency of vitamin A in the rat results in keratinization and desquamation of the lining epithelium of the urinary tract, a process that supplies the organic nidus for the deposit of crystalloids.[35] 2. The calculi form because deficiency of vitamin A in the diet results in strong urinary alkalinization [36] either as a primary effect or secondary to infection.

It may be that this alkalinization affects the physicochemical condition, chiefly the balance of protective colloids, of the urine, which, it is claimed,[37] favors precipitation of the crystalloids. This mechanism of precipitation of urinary crystalloids is denied by some investigators.[38] It should be obvious at once that all this applies only to the possible origin of stones that form in an alkaline medium and that it cannot apply to those that do not form in such a medium. It pertains to the types of stone most commonly found in the urinary system of the rat. Practically all investigators [39] are agreed that these are composed mainly of phosphates and carbonates of calcium and magnesium, when the diet is deficient only in vitamins A and D, and of calcium carbonate and calcium hydroxide, when, in addition, the diet contains an excess of calcium. Since urinary calculi in man, especially renal, are by no means always of this composition or formed in an alkaline medium, this again indicates the danger of applying to man what has been learned from a study of the rat. This is particularly true in consideration of the possible medical management of urinary, especially renal, lithiasis.

Up to the present time, only Saiki,[40] Fujimaki [26] and Higgins [41] have claimed the effective solution of experimental urinary calculi in the rat and dog [26] by the administration of a source of vitamin A. Actually they administered a source of vitamins A and D to produce the solution of the calculi, and the experimental diets which they used for the production of the stones were deficient in both of these vitamins. Higgins [42] has also claimed success in the solution of urinary calculi in man. This has been done by the administration of a diet with an acid ash and a liberal amount of several sources of vitamins A and D. According to Higgins, partial or complete solution of renal calculi has been accomplished in twenty-one cases. Partial solution of calculi by medical means would accomplish but little, except perhaps in the case of impacted ureteral or pelvic stones, the passage of which might thereby be aided. Since Higgins did not try the effect of the acid ash diet alone or of each of the vitamins alone, it is difficult to draw any conclusions from these experiments on man about the value of

23. Osborne, Mendel and Ferry.[15] Perlman and Weber.[15] VanLeersum.[17] VanLeersum.[18]

24. McCarrison, Robert: On the Causation of Stone in India, Lancet **1:** 1413 (June 27) 1931. McCarrison, Robert, and Ranganathan, S.: On the Relative Importance of Vitamin A, Radiostoleum, Cod Liver Oil and Sodium Phosphate in Preventing the Formation of Calcium Stones in the Urinary Tract of Albino Rats, Indian J. M. Res. **19:** 55 (July) 1931.

25. McCarrison.[5] McCarrison.[24] McCarrison.[29] McCarrison.[4]

26. Fujimaki, Y.: Formation of Urinary and Bile Duct Calculi in Animals Fed on Experimental Rations, Japan M. World **6:** 29 (Feb. 15) 1926.

27. Padua, R. G.: Cystolithiasis Among Filipinos in Association with Dietetic Deficiency, Philippine J. Sc. **14:** 481 (May) 1919.

28. Watchorn, E.: The Effects of Excessive Intake of Magnesium by the Rat, Especially Concerning the Factors Relating to the Production of Renal Calculi, J. Hyg. **32:** 156 (April) 1932.

29. McCarrison, Robert: Further Researches on Stone, Indian J. M. Rec. **18:** 903 (Jan.) 1931.

30. Ranganathan, S.: Researches on Stone, Studies in Calcium and Phosphorus Metabolism, Indian J. M. Res. **19:** 1 (July) 1931.

31. Grossmann, W.: Beiträge zur Pathologie und Klinik der Harnsteinkrankheit, Ztschr. f. urol. Chir. **38:** 264, 1933.

32. McCollum, E. C., and Simmonds, Nina: The Newer Knowledge of Nutrition, ed. 4, New York, Macmillan Company, 1929.

33. Ebstein, W., and Nicolaier: Ueber die experimentelle Erzeugung von Harnsteinen, Verhandl. d. Kong. f. inn. Med., Wiesbaden, 1889, p. 268.

34. Keyser, L. D.: The Mechanism of the Formation of Urinary Calculi, Ann. Surg. **77:** 210 (Feb.) 1923.

35. Higgins.[42] Hryntshak.[32] McCarrison.[4]

36. Higgins, C. C.: The Experimental Production of Urinary Calculi.[32] Higgins.[42] Osborne, Mendel and Ferry.[15] Ravich.[1]

37. Bliss, Livermore and Prather.[19] Joly.[6] Keyser.[34] Lichtwitz, L.: Die Bildung der Harnsedimente und Harnsteine, Ztschr. f. Urol. **7:** 810, 1913; Entstehung von Niederschlägen im Harn und in den Harnwegen, Deutsche med. Wchnschr. **39:** 91, 1913. Ord, W. M.: Influence Exercised by Colloids upon the Forms of Inorganic Matter, St. Thomas Hosp. Rep. **2:** 1 1871. Ord, W. M., and Shattock, S. G.: On the Microscopic Structure of Urinary Calculi of Oxalate of Lime, J. Path. Soc. London **46:** 91, 1895. Ravich.[1] Schade, H.: Beiträge zur Konkrementbildung, München. med. Wchnschr. **56:** 77, 1909. Spitzer, W. M., and Hilkowitz, Philip: The Cause of Stone in the Urinary Tract, J. Urol. **11:** 327 (April) 1924. Squier.[10]

38. Meyer, J.: Ueber die Ausfällung von Sedimenten und die Bildung von Konkrementen in den Harnwegen, Ztschr. f. klin. Med. **3:** 613, 1929. Newcomb, C.: The Rôle of Urinary Colloids in the Prevention of Stone Formation, Indian J. M. Res. **18:** 275 (July) 1930.

39. Bliss, Livermore and Prather.[19] Fujimaki.[26] McCarrison.[5] McCarrison.[18] McCarrison and Ranganthan.[24] McCarrison.[29] McCarrison.[24] McCarrison.[4] Osborne, Mendel and Ferry.[15] Ranganathan, S.: Chemical Composition of Urinary Calculi, Indian J. M. Res. **18:** 599 (Oct.) 1930. Ranganathan.[30]

40. Saiki, T.: Disposition und Ernährung, Deutsche med. Wchnschr. **53:** 517, 1927.

41. Higgins.[42] Higgins, C. C.: The Medical Management of Urinary Lithiasis, Cleveland Clinic Quarterly **2:** 44, 1935.

42. Higgins, C. C.: The Medical Management of Urinary Lithiasis, S. Clin. North America, Cleveland Clinic Number, 1935, p. 923; The Medical Management of Urinary Lithiasis, M. Ann. District of Columbia **4:** 63 (March) 1935.

each of the three factors used for the partial or complete solution of the calculi. It is not possible to determine from his results whether all three are necessary, and certainly his studies do not justify the conclusion that vitamin A alone was responsible for the effect or even that it played an important part.

It is strange that neither Higgins nor any other investigator has studied the possible concrement producing properties of a diet with an alkaline ash, but otherwise complete in all respects, or the effect of administering only an acid ash diet to rats with calculi in the urinary system developed on a diet deficient in vitamins A and D or, better, deficient in only one of these vitamins. This should be done, because Higgins [43] showed that the addition of ammonium chloride alone to his stone producing diet reduced the incidence of urinary calculi. A definite answer to all these questions would go far in helping to determine the justification for the medical treatment of urinary lithiasis and for the unavoidably long delay which this causes if surgical intervention must eventually be employed.

In view of the foregoing considerations, the Council decided that the existing evidence does not warrant claims for the use of any of the vitamins, and particularly of vitamin A, in the prevention or treatment of urinary lithiasis and, further, that no such claims may appear in the advertising of accepted products.

Committee on Foods

ACCEPTED FOODS

THE FOLLOWING PRODUCTS HAVE BEEN ACCEPTED BY THE COMMITTEE ON FOODS OF THE AMERICAN MEDICAL ASSOCIATION FOLLOWING ANY NECESSARY CORRECTIONS OF THE LABELS AND ADVERTISING TO CONFORM TO THE RULES AND REGULATIONS. THESE PRODUCTS ARE APPROVED FOR ADVERTISING IN THE PUBLICATIONS OF THE AMERICAN MEDICAL ASSOCIATION, AND FOR GENERAL PROMULGATION TO THE PUBLIC. THEY WILL BE INCLUDED IN THE BOOK OF ACCEPTED FOODS TO BE PUBLISHED BY THE AMERICAN MEDICAL ASSOCIATION.

RAYMOND HERTWIG, Secretary.

CELLU LOGANBERRIES PACKED IN WATER WITHOUT ADDED SUGAR OR SALT

Distributor.—The Chicago Dietetic Supply House, Inc., Chicago.

Packer.—Eugene Fruit Growers Association, Eugene, Ore.

Description.—Canned cooked loganberries packed in water without added sugar or salt.

Manufacture.—The method of manufacture is essentially the same as for Cellu Blackberries Packed in Water Without Added Sugar or Salt (THE JOURNAL, Sept. 28, 1935, p. 1039).

Analysis (submitted by distributor).—

	per cent
Moisture	89.2
Total solids	10.8
Ash	0.4
Fat (ether extract)	0.6
Protein (N × 6.25)	1.0
Reducing sugars as invert sugar	3.5
Sucrose	0.1
Crude fiber	2.0
Carbohydrates other than crude fiber (by difference)	6.8

Calories.—0.4 per gram; 11 per ounce.

Claims of Distributor.—For diets in which sweetened fruit is proscribed.

MELCOSE

Manufacturer.—The Baker Laboratories, Inc., Cleveland.

Description.—A canned, sterilized homogenized mixture of partially evaporated milk, corn syrup (essentially dextrins, maltose and dextrose) and ferric ammonium citrate, U. S. P.

Manufacture.—The whole milk used is produced by tuberculin tested herds inspected by the Cleveland City Board of Health and is regularly tested by city and Baker Laboratory inspectors. On receipt at the factory, the milk is inspected, weighed, pumped into holding vats, drawn into "hot wells," heated to boiling, concentrated in vacuum pans to half its original volume, homogenized and cooled, and the corn syrup and the ammonioferric citrate are added. The mixture is adjusted to standard composition by laboratory analysis, automatically canned, sealed, and sterilized at 116-118 C. for thirty minutes.

Analysis (submitted by manufacturer).—

	per cent
Moisture	70.1
Total solids	29.9
Ash	1.3
Fat	6.4
Protein (N × 6.25)	5.4
*Dextrins	4.7
*Reducing sugars as maltose	3.0
*Dextrose	1.0
Total carbohydrates (by difference)	16.8
Iron (Fe)	0.002

* Estimated from formula and analysis of corn syrup.

Calories.—1.5 per gram; 43 per ounce; 47 per fluid ounce.

Claims of Manufacturer.—For use in infant feeding under the directions of a physician.

JEFFERSON ISLAND EVAPORATED FREE RUNNING IODIZED TABLE SALT

Distributor.—Jefferson Island Salt Company, Inc., Louisville, Ky.

Manufacturer.—Jefferson Island Salt Mining Company, Inc., Jefferson Island, La.

Description.—Table salt containing 1 per cent added magnesium carbonate and 0.02 per cent potassium iodide.

Manufacture.—Salt containing 1 per cent magnesium carbonate, prepared as described for Jefferson Island Evaporated Free Running Table Salt (THE JOURNAL, Oct. 5, 1935, p. 1119), is admixed with potassium iodide and automatically packed.

Analysis (submitted by manufacturer).—

	per cent
Moisture	less than 0.1
Calcium sulfate	0.1
Calcium carbonate	0.03
Magnesium carbonate	0.9
Potassium iodide	0.025
Sodium chloride (by difference)	98.9
Silica	0.006

Claims of Manufacturer.—For all table and cooking uses. The added magnesium carbonate tends to preserve free running qualities. The iodine in the salt aids in preventing simple goiter caused by insufficient iodine in the diet. Used daily as the only salt on the table and in cooking, it richly supplements the iodine of diets deficient in that element and thus helps to protect against simple goiter.

1. L C BRAND CRYSTAL WHITE SYRUP
2. L C BRAND GOLDEN SYRUP

Distributor.—L. C. Mercantile Company, Inc., Mendota, Quincy, Springfield and Danville, Ill., and Fort Wayne, Ind.

Packer.—American Maize Products Company, New York.

Description.—1. Table syrup; a corn syrup with added sucrose syrup; flavored with vanilla. The same as Amaizo Crystal White Syrup (THE JOURNAL, July 16, 1932, p. 224).

2. A blend of corn syrup and refiners' syrup flavored with vanilla extract. The same as Amaizo Golden Syrup (THE JOURNAL, May 16, 1931, p. 1695).

Claims of Distributor.—Recommended for use as an easily digestible and readily assimilable carbohydrate supplement to milk in infant feeding and as a syrup for cooking, baking and the table.

VERIFINE BRAND EVAPORATED MILK

Manufacturer.—Verifine Dairy Products Company, Sheboygan, Wis.

Description.—Unsweetened, sterilized evaporated milk. The composition and procedure of evaporation and canning are essentially the same as for the usual evaporated milk (THE JOURNAL, April 16, 1932, p. 1376).

43. Higgins, C. C.: Production and Solution of Urinary Calculi: Experimental and Clinical Studies, J. A. M. A. **104**:1296 (April 13) 1935.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, DECEMBER 14, 1935

ORGANIC AND INORGANIC ARSENIC

Arsenic is one of the oldest of therapeutic substances; in certain forms, notably the sulfides, it has been therapeutically employed since the beginning of the Christian era. With its increasing use in the arts and industry, opportunity for arsenic poisoning, either accidental or with suicidal intent, has been progressively greater. Recently, however, much apprehension has been expressed over the possibility of chronic poisoning with arsenic through the use of its compounds in sprays for fruits and vegetables as well as in foods artificially prepared by the use of chemical reagents contaminated with arsenic. It seems likely that in the forthcoming revision of the pure food law more attention will be given to the amounts of certain of the toxic elements, such as arsenic, fluorine and lead, occurring in food materials.

Many of the so-called toxic elements as well as other more or less unusual metals are fairly constant constituents even of virgin soil; the ash of plants contains these elements. It is not surprising that the tissues of man and other animals are likewise found to have them as rather constant constituents. Thus arsenic has been found in human organs, the amount increasing with age, in normal human urine, and in blood, in which fluid it is said to increase during menstruation. In the case of certain of these "trace" elements, notably iron, copper and manganese, it has been shown that they play an indispensable part in the physiologic well being of the organism.

In view of the ubiquitous distribution of arsenic, considerable interest attaches to the recent report of Coulson, Remington and Lynch[1] in which the metabolism of arsenic in organic combination in certain marine food materials is compared with that of arsenic trioxide. A comparison of the arsenic content of shrimp from various Southern states showed a range of from 3.8 to 130 mg. per kilogram of dry material. This permitted the use of experimental rations of both high and low concentrations of arsenic, shrimp being used as well as the trioxide as the source of arsenic in separate diets. On the stock food extremely poor in arsenic, it was observed that albino rats stored increasing amounts of this element with advancing age; the study showed, furthermore, that the arsenic accumulates in the liver in higher concentrations than in the other tissues. It was shown that the bodies of the animals consuming the shrimp diet rich in arsenic contained from two to four times more arsenic than was present in the controls fed the stock ration, whereas the same amount of arsenic given as the trioxide induced a storage of about sixty times that in the controls. An examination of the absorption of the arsenic showed that less than 2 per cent of the shrimp arsenic was retained; when the trioxide was fed, roughly 80 per cent was retained. Ninety-six per cent of the absorbed organic arsenic was eliminated by the kidney, whereas the excretion was equally divided between urine and feces when the trioxide was given. Similar experiments on human subjects indicated that the degree of retention of the organic and inorganic arsenic was somewhat more nearly alike, though here again more remained in the body when the trioxide was ingested.

These observations indicate that the form of combination in which inorganic elements are presented to the organism may exert a profound influence on the metabolism of the element in question. A recent report[2] of the difference in the availability of the calcium from two different leafy vegetables further illustrates this thesis. It is obvious, in the light of some of the recent investigations in the field of nutrition, that the formulation of a tenable legal point of view regarding the limits of concentration of some of the toxic elements becomes increasingly difficult.

1. Coulson, E. J.; Remington, R. E., and Lynch, K. M.: J. Nutrition **10**: 255 (Sept.) 1935.

THE OLFACTORY TRACT AND EXPERIMENTAL POLIOMYELITIS

Epidemiologic and experimental evidence seem to indicate that the virus of poliomyelitis gains entrance to the central nervous system chiefly through the nasopharynx, probably by way of the olfactory nerve. It is an interesting fact that the olfactory nerve fibers are derived from cells situated actually on the surface of the body in the upper part of the nasal cavity. The fibers from the olfactory cells pass through the cribriform plate of the ethmoid bone to the olfactory bulb lying under the inferior surface of the frontal lobe of the brain. The terminal fibers of the nerve are therefore exposed to the external environment. Many years ago it was shown that poliomyelitis could be produced in monkeys by instilling the virus into the nose. Flexner and Clark found that within forty-eight hours after intranasal inoculation the olfactory lobes

2. Finke, M. L., and Sherman, H. C.: J. Biol. Chem. **110**: 421 (July) 1935.

became infective. Poliomyelitis virus has been found in the washings or tissues of the nasopharynx in the experimentally produced disease, in the disease in human beings and in healthy contacts.

Not only were Schultz and Gebhardt [1] able to infect 95 per cent of monkeys inoculated with virus intranasally, but they offered experimental proof that the virus gained entrance to the central nervous system by way of the olfactory nerve. With an electric cautery they sectioned the region of the olfactory bulb and olfactory tract of six Macacus rhesus monkeys for a distance of about 2 cm. Fifteen days later they instilled intranasally poliomyelitis virus not only into these monkeys but also into three normal control monkeys. Out of the nine monkeys inoculated intranasally with poliomyelitis virus, only the control monkeys developed the disease, and all three of them did so on the seventh day. Schultz and Gebhardt repeated this experiment sixteen days later, again subjecting the six monkeys that had been operated on to three intranasal instillations of virus, this time using two control monkeys. The animals that had had operation again continued to remain well, while the two controls developed poliomyelitis on the seventh day. Three weeks after the second intranasal instillations, the monkeys submitted to operation were inoculated intracerebrally with poliomyelitis virus to test their susceptibility to the virus. All of them now developed typical poliomyelitis in from five to eight days.

The ingenious experimental work of Schultz and Gebhardt was recently confirmed by Lennette and Hudson,[2] who, months after sectioning the olfactory tracts of five Macacus rhesus monkeys, inoculated them intranasally with the virus. None of these monkeys showed any signs of poliomyelitis, whereas the nine controls whose olfactory tracts had not been sectioned succumbed to poliomyelitis after intranasal inoculation. The Chicago investigators furthermore inoculated five monkeys that had had operation and five normal animals with poliomyelitis virus intravenously on three successive days. None of the animals whose olfactory tracts had been severed showed any evidence of infection, while four of the five control animals succumbed to poliomyelitis. An interesting question arises: Was the virus excreted in the four monkeys from their blood stream onto the nasal mucosa? If so, it should be recoverable from the nasal washings. Continuing the investigation, Lennette and Hudson now gave to four immune and six normal monkeys intravenous injections of poliomyelitis virus on two successive days. The result was that none of the immune monkeys became infected, while five of the six control monkeys died of poliomyelitis. On the second, fourth and sixth days of the experiment, the nasopharynx of each monkey was washed out with sterile distilled water and the washings were pooled in groups comprising those from the immune animals and those from the controls. The pooled washings were passed through a Berkefeld N filter, then concentrated by boiling in vacuo and injected intracerebrally into test monkeys. These experiments were negative except in one animal, which received the pooled washings obtained on the fourth day from a group of normal monkeys. This monkey died of typical poliomyelitis. When the difficulty of detecting poliomyelitis virus in nasal washings is considered, the authors believe that the one positive result is significant.

Another interesting and possibly important experimental study on the prevention of poliomyelitis has been reported by Armstrong and Harrison [3] of the U. S. Public Health Service. At varying times relative to the inoculations they instilled 1.5 cc. of a 4 per cent sodium aluminum sulfate solution, alum, into the nostrils of a group of rhesus monkeys inoculated intranasally with poliomyelitis virus. The result was that of twenty-four alum-prepared monkeys only six died of poliomyelitis, whereas among twenty control animals sixteen died of poliomyelitis. The percentage of the two groups of monkeys surviving was therefore 76 and 16, respectively. The mechanism by which the alum exerted a protective effect in these experiments was not definitely determined. The authors believe that it was probably a decrease in the permeability of the mucous membrane of the nose rather than an antiseptic action. This method of prevention is not recommended for human use; however, further study in this direction may lead to effective methods of prevention.

1. Schultz, E. W., and Gebhardt, L. P.: Olfactory Tract and Poliomyelitis, Proc. Soc. Exper. Biol. & Med. **31**: 728 (March) 1934.

2. Lennette, E. H., and Hudson, N. P.: Relation of Olfactory Tracts to Intravenous Route of Infection in Experimental Poliomyelitis, Proc. Soc. Exper. Biol. & Med. **32**: 1444 (June) 1935.

3. Armstrong, Charles, and Harrison, W. T.: Prevention of Intranasally Inoculated Poliomyelitis of Monkeys by Instillation of Alum into the Nostrils, Pub. Health Rep. **50**: 725 (May 31) 1935.

STRUCTURE OF GLUTATHIONE

The progress made in the elucidation of the chemistry and physiology of biologically important substances determines the rôles that can be assigned to these compounds in metabolic processes. In some instances, complete chemical knowledge and even synthesis of a compound provides a tremendous stimulus to the development of conceptions regarding its physiologic functions. This is seen, for example, in the large number of publications appearing on the biochemistry and physiology of vitamin C, the ready synthetic production of which in the laboratory, made possible by the establishment of its chemical constitution, has made this vitamin available for experimental and clinical use in the form of pure crystals (cevitamic acid). On the other hand, functional studies of physiologically important substances have often preceded the development of knowledge of their chemical identity, particularly when a type grouping in the compound may be responsible for its metabolic importance. This is true of the tripeptide glutathione, the sulfhydryl grouping of which

and the ready conversion of sulfhydryl to disulfide and back to sulfhydryl have led to the conception of its importance among the substances catalyzing body processes, particularly oxidations and reductions occurring in the tissues.

The structure of glutathione was first established as a dipeptide, glutaminylcysteine, and this configuration was later confirmed by synthesis. However, reinvestigations of the compound during recent years have clearly demonstrated the presence of a third amino acid, aminoacetic acid (glycine), in the glutathione molecule. Studies of glutathione and its degradation products have produced evidence that it is of the tripeptide constitution, glutaminylcysteinyl-aminoacetic acid. Final confirmation of this evidence, however, awaited the synthesis of this substance and the establishment of the identity of the synthetic product with the naturally occurring tripeptide.

The preparation of cysteinyl and cystinyl peptides, that is, peptides in which the carboxyl group of these amino acids has been conjugated with the amino group of another amino acid, is attended with considerable difficulty, largely because of the lability of the sulfur in the molecule under the conditions generally employed in the preparation of peptides in the laboratory. However, the first synthesis of cystinyl peptides has recently been accomplished [1] by careful modification of the classic procedure of Bergmann and Zervas.[2] Both cystinyldi-aminoacetic acid and cystinyldialanine were prepared in an analytically pure state, with the view to the application of a similar method to the synthesis of glutathione. The latter difficult achievement, however? has now been reported from the laboratory of Harington,[3] whose brilliant work in the establishment of the structure and synthesis of thyroxine placed him in the front rank of organic chemists investigating biologically interesting substances. Harington and Mead have established the identity of their synthetic tripeptide, glutaminylcysteinyl-aminoacetic acid, with the naturally occurring glutathione. At approximately the same time, confirmatory evidence of this structure has appeared [4] in which the synthetic dipeptide cysteinyl-aminoacetic acid has been shown to be identical with a dipeptide obtained from glutathione by a mild hydrolytic procedure. The latter investigation is of interest because it suggests still another method of approach to the synthesis of glutathione by procedures that may make available adequate amounts of this substance for research purposes. This would be of considerable value in investigations designed to add further information regarding the many important physiologic and metabolic functions already suggested for glutathione.

1. White, Julius: The Synthesis of Cystinyldiglycine and Cystinyldialanine, J. Biol. Chem. **108:** 141 (Aug.) 1934.
2. Bergmann, M., and Zervas, L.: Ber. Chem. Ges. **65:** 1192, 1932.
3. Harrington, C. R., and Mead, T. H.: Synthesis of Glutathione, Biochem. J. **29:** 1602 (July) 1935.
4. Loring, H. S., and du Vigneaud, Vincent: The Synthesis of Crystalline Cystinyldiglycine and Benzylcysteinylglycine and Their Isolation from Glutathione, J. Biol. Chem. **111:** 385 (Oct.) 1935.

Current Comment

ADVANCE IN MEDICAL SCIENCE IN GERMANY

During the past year THE JOURNAL published a series of articles under the general title "Glandular Physiology and Therapy." This series attracted world-wide attention; requests were received from publishers and translators in seven nations for rights to translate and republish these articles. Among others came a letter from Germany to the effect that the publishers Urban and Schwarzenberg in Berlin were anxious to take over the publication of the book in German. These publishers were offered the same type of arrangements offered to those in other countries. Next came a letter requesting that there be forwarded to Germany the original German text of the paper by Aschheim; this and the article by Zondek were originally written in German and translated for the series in THE JOURNAL. In answer to this request, the copy was forwarded to the German translator. Now comes a letter from the translator reading "I have just received a communication from the publishers Urban and Schwarzenberg in which they inform me that they are unable to publish the planned translation of the series of articles on 'Glandular Physiology and Therapy' since it contains articles by former German professors." Eventually, no doubt, the effects of the return of medicine in Germany from modern science to medievalism will be reflected in the health of the German people.

HANDBOOKS FOR DEBATERS ON SUBJECT OF STATE MEDICINE

In the issue for October 19 THE JOURNAL called attention to some of the handbooks that have been prepared for the use of debaters in the discussion now going on in high schools and universities on the subject of state medicine. On November 12 a debate was held on the radio in which Mr. William Trufant Foster, director of the Pollak Foundation for Economic Research, and Bower Aly, director of forensics at the University of Missouri, discussed the affirmative and Drs. Morris Fishbein and R. G. Leland the negative. This debate is printed in full in the current issue of the *American Medical Association Bulletin* [1] and is available to physicians on request. Another debate handbook [2] has been prepared by the Debaters Information Bureau, with headquarters in Portland, Maine. Of this, J. Weston Walch is the compiler. It is produced in facsimile typewritten form and consists of about 158 pages, covering much the same ground as the handbooks previously referred to. Among the items recently made available by medical organizations is a mimeographed handbook [3] entitled "A Digest of Sickness Insurance," prepared by the Chester County

1. The Radio Debate on State Medicine, A. M. A. Bull. **30:** 113 (Nov.) 1935.
2. Complete Handbook on State Medicine, J. Weston Walch, chief compiler, Debaters Information Bureau, 45A Free Street, Portland, Maine.
3. A Digest of Sickness Insurance, Chester County Medical Society, West Chester, Pa. Copies obtainable for 30 cents postpaid from R. T. Devereux, M.D., 37 South High Street, West Chester, Pa.

Medical Society in West Chester, Pa. This represents largely a compilation of material developed through the Bureau of Medical Economics of the American Medical Association. The Wisconsin State Medical Association has prepared its own discussion outline [4] for the use of physicians. This outline also is developed from the pamphlets issued by the Bureau of Medical Economics and by the State Medical Society of Wisconsin and is supplemented by a tentative debate outline for high school use. An elaborate handbook [5] has also been prepared by the Minnesota State Medical Association. This contains much material developed by Minnesota writers, with the belief, no doubt well founded, that Minnesota high school students and Minnesota audiences are more likely to be interested in what their own physicians are saying. This, indeed, is a further demonstration of the confidence rightly to be held by the patient in his own physician. Among the most interesting of the items in the Minnesota pamphlet is the article on "Guild" medicine by Prof. Richard E. Scammon—a fine scientific plea for the perpetuation of medical ideals and standards.

NOBEL PRIZE IN MEDICINE

The Nobel prize in medicine this year was awarded to Prof. Hans Spemann, ordinarius in zoology at the University of Freiburg-im-Breisgau, in recognition of his work on what is called the organ-producing effect. By this effect is meant, for example, the action that a dissected portion of the upper lip of the primitive orifice of the larva of the water newt exerts on cells in its vicinity when it is transplanted to another portion of the body. Apparently these cells obtain, through the action of the implant, a new quality, which permits them to act as the anlage or embryonic cells of the organ that would have developed at the spot from which the transplant was cut. That is to say, there develops from these cells a primitive nervous system, an embryonic medullary tube, or perhaps the anlage for the spinal cord and brain. The physical-chemical nature of this organ-producing substance is not yet established. Spemann assumed at first that the living quality of the transplant was an essential factor in its effect. He discovered, however, that the effect is produced also by a dead explant and that under certain circumstances the tissue of the explant may be replaced by other substances. These experiments would seem to constitute the beginning of knowledge of the causes of organ development from definite portions of the embryo. They are of great biologic significance. The Nobel prize winner, Spemann, who is now 66 years of age, was formerly a zoologist at the University of Rostock. In 1914 he was appointed assistant director of the Kaiser Wilhelm Institut für Biologie in Berlin-Dahlem, and since 1919 he has occupied the chair of zoology at the University of Freiburg-im-Breisgau. He is also editor of the *Archiv für Entwicklungsmechanik*.

4. Discussion Outline Social Medicine and Sickness Insurance, State Medical Society of Wisconsin, Madison, Wis. Copies obtainable from J. G. Crownhart, secretary, State Medical Society of Wisconsin.
5. Handbook, Minnesota State Medical Association, 11 West Summit Avenue, St. Paul.

Medical Economics

PRESENT STATUS OF THE PRACTICE OF MEDICINE IN THE UNION OF SOCIALIST SOVIET REPUBLICS

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What with wishful thinking, plain ignorance and sheer progaganda, there is such a cloud of confusion on the present-day status of the practice of medicine in the Soviet Union that it seems desirable to put down what facts can be actually verified from unimpeachable official sources and personal observation. The material was gathered while I was visiting Russia incidental to the fifteenth International Physiologic Congress. I was given every facility to come and go freely. As I speak the language, I needed no interpreters or guides. My expenses were all defrayed by myself.

In order to obtain a fair background of the present situation, one must first grasp the fundamental fact that the Soviets inherited a country endowed with only a meager medical system. According to the Great Russian Encyclopedia (volume 31), in 1913 within the confines of the present Russian Federated Socialist Soviet Republic there were listed only 13,154 physicians. There were only 37,476 nurses. The great bulk of this personnel was concentrated in the larger cities. The vast village population was left, practically speaking, to its own devices. Whole counties had a couple of nurses as its entire medical staff. As a result of the World War and the disastrous civil wars, but little of even this personnel was left over. The absence of medical aid and the breakdown of civilized standards led to successive waves of epidemics of cholera, typhus, malaria and similar scourges.

In an effort to organize medical cadres as rapidly as possible, the Soviet government proceeded to organize "rapid courses" of training. The procedure was roughly like this: A promising young peasant or worker was sent through a three year "workers' faculty." He received the three R's and the rudiments of a high school course. He was paid all the time by the government exactly as if he had continued on his previous job. The more talented of the graduates of these faculties were then sent to special condensed medical courses, which would turn out medical graduates in three and one-half years or, in case of "sanitation specialists," in as little as two and one-half years. No laboratory work of significance and no equivalent of an internship was provided. Kaminsky—the commissar of national health—in his authoritative report to the sixteenth All-Russian Congress of Soviets frankly states that the work done by these graduates is "completely inadequate." By early 1935 there was a total of about 53,000 graduate medical men and women in Russia: roughly about 46 per hundred thousand of population.

In return for having his way paid through school, the graduate is obligated to go to any post assigned to him for the next five years. This has meant the village or small city. As a result, the country as a whole is acquiring some type of medical man for the first time in its history. In actual training he is not better than a superior nurse in the United States, but he has been able to cope, at least in part, with the various plagues, so that mortality and morbidity statistics are showing marked improvement over fifteen years ago although, of course, not on a par with comparable statistics in our country.

Steps have now been taken to improve the medical graduate. Kaminsky in the report already referred to enumerates the results of the decree of Sept. 3, 1934: 1. A standard minimum five year course. 2. Increasing stipends to teaching staffs and students from 40 per cent to 90 per cent in an effort to ameliorate living conditions. 3. Sums running into millions of gold rubles

being spent on creating adequate laboratory and classroom facilities. 4. Fairly stiff government examinations before graduation to ensure the quality of the new men. 5. Increase in the number of teaching institutions with the aim of ensuring 7,000 new doctors annually. All these things are not mere paper dicta, as numerous new buildings are actually going up in Leningrad, Moscow, Kharkov, Kiev and other medical centers of the country. If uninterrupted, this program should lead to substantial results in the near future. It is to be hoped that this decree will rapidly eliminate the poorer schools which arose out of the necessities of the immediate postwar years.

The actual present status of medical aid to the population presents an uneven picture, with generalizations being subject to revision almost monthly. In the villages, nuclei of medical practice are being established. The young medical graduate is better than nothing at all and he certainly is a focus of some sanitary instruction. One can see that in his crude little room or two he is doing excellent pioneer work in smallpox and typhoid control, child care, elementary sanitation, civilizing habits of cleanliness and so on. While, on the average, he is doing no surgery and committing countless errors of diagnosis and treatment, still he is a beneficent village influence that was absent twenty years ago.

He is aided by the "middle medical personnel"; i. e., the "feldsher" (assistant to the physician) and the nurse. Many a village in the absence of a doctor receives its entire medical care from these individuals. There are close to 150,000 of them today. Their average seems to be of quite low standards. Kaminsky, again in all frankness, regretfully says that "their training has been a neglected and forgotten field."

At this point I might mention in passing that there is an acute shortage of most indispensable drugs. "Paint them iodine and mark them duty" becomes a grim jest when even digitalis and ether are hard to get. Again Kaminsky tells of the steps being taken to ameliorate this grave handicap.

In the cities the situation is much better. The organizational plan is quite simple in theory. The city is divided into numerous small districts. One or more physicians are on duty all the time in each district to make house calls. Then there are polyclinics for ambulatory patients and hospitals for the very ill. The whole organization is completely centralized in Moscow, with local units having autonomy only in details. Leningrad, with a population of 2,700,000, may be taken as an example. This city has 110 outpatient clinics. During 1934, 16,290,715 individual calls were made at them. Smallpox vaccination is universal. More than 700,000 protective typhoid series were given. The water supply of the city has been safeguarded by chlorination. Milk is pasteurized, but control at the source is admittedly inadequate. Food is being inspected at the plants. Infant care is an absorbing problem. Infant mortality has fallen from 22 per cent before the war to 14 per cent this year. Maternal mortality is quite low. Abortions are entirely legal, although socially condemned. There is extensive birth control education. The net of "crèches" or nurseries at factories is being extended as rapidly as possible. There are 157 of these, with 11,245 cribs. There are sixty-three hospitals with a total of 21,285 beds. During 1934 these had 388,678 admissions, with a total of 7,060,985 bed days. There are in the entire city 8,780 medical posts with 6,331 doctors available, of whom 519 have had only the "sanitary course" and so are not really physicians in our meaning of the word.

Of the city's hospitals the Metchnikov Institute is considered on a par with the best. It has 2,500 beds. There is no provision for psychiatric, contagious or pediatric cases. It approaches in general appearance Guy's in London or the Cook County Hospital in Chicago. The director of the hospital is a nonmedical man. He hires and fires the junior staff. The chiefs of departments are appointed direct from Moscow. It is a teaching institution with 180 doctors among its 2,000 employees.

The mortality at Leningrad has dropped from a peak of 771 per 10,000 in 1919 to 149 per 10,000 in 1934. Tuberculosis is the most important single cause of death: 22.7 per 10,000.

Dr. Bogin, the chief of the Leningrad Health Bureau (and authority for the figures just given) dwelt frankly on their outstanding practical difficulties. Because all calls are free, there is an enormous wastage of effort on trivial complaints. Consideration is being given to making a nominal charge for polyclinic calls and a larger charge for house calls in order to reduce the pressure of work on the staff. There is insufficient incentive for the junior staff men to do good work. They have only one doctor to 3,000 adults. Many men in responsible posts are not well qualified. Still he appeared optimistic and thought that they would surmount their present difficulties within the next few years. Because of the high degree of centralization, there is a total absence of cultism and there are no complications with such organizations as the Anti-Vivisection Society. Also, the factory organizations were being made to realize their difficulties and were extending active practical aid in coordinating medical inspection at the various plants, giving them space, time and other considerations.

The economic status of the Russian doctor is still quite bad, although no longer as impossible as it was before the decrees of 1934, already mentioned, and the supplementary law of March 1935. The average doctor today receives from 300 to 400 rubles per "job." If he holds two posts (as many do) he may receive between 600 and 700 rubles a month. A senior staff member may get from 1,000 to 5,000 rubles a month. Furthermore, about 10 per cent of the doctors do private consulting work. This is the only nonsocial medical practice still surviving in Russia. Because of the low quality of the new graduates, many members of the new bureaucracy, better paid engineers, and so on, when they become ill, ask to have certain men to examine them. This they can do by paying the consultant out of their own pocket. In practice this means that some of the professors of medicine can earn as much as from 4,000 to 5,000 rubles a month.

A word should be said here about what the ruble will really buy. It is worth theoretically 87 cents. However, it is an open secret that on the illegal "black bourse" a dollar will buy thirty paper rubles. But it is really worth more. Such an important item on the budget as rent is calculated on a percentage basis of one's salary. Furthermore, certain articles of clothing and food were still obtainable in "closed stores" (for institution's employees only) at material reductions in price. Bread in the summer of 1935 cost 1 ruble a pound. A ten dollar suit cost 400 rubles. An excellent theater seat is only 3 rubles. It should be noted that the Soviets are actively deflating the ruble: prices are falling steadily. If the crops this fall really turn out as they were expected to, further drastic reductions in the high cost of living will become highly probable. For the present it would not be far wrong to say that the ruble is about on a par with the French franc. This means that on a 400 ruble salary the doctor is earning around $30 a month. This compares with the 125 ruble a month minimum for unskilled labor, from 200 to 300 for skilled labor, from 400 to 600 for an average engineer, and up to 1,000 to 1,500 for the manager of the factory.

The social status of the Soviet doctor is again a thing most difficult to evaluate. The prewar graduate, the professor of medicine or surgery, the consultant busy practicing the art of medicine, unquestionably command an outstanding niche in Soviet society. They constitute about 10 per cent of the profession. The young graduate does not have, as yet, either the ability or the culture to be in the front rank. The average intelligent citizen is faintly contemptuous of his training and frankly fearful of his ministrations. At present he seems to be regarded as somewhat better than a skilled artisan but certainly not on the level with a good engineer or a director. An

impression cannot be evaluated precisely but is given as my reaction. As his technical quality improves and as his cultural stature grows his social standing will undoubtedly rise.

Summarizing briefly, it seems fair to say that there is today in Russia a medical service which, no matter how modest, is an enormous advance over prewar conditions. While qualitatively it is still very low grade, steps are being taken to remedy the situation in the near future. The soviets have planned and are doing noteworthy things along the line of maternity care and infant welfare. Lack of space confines me to a mere mention of these excellent features. The average doctor is badly underpaid and terribly overworked. Practical steps are being taken to correct this. However, as of today, the free medical service is rather low grade. The care received by a patient who can afford to select and pay privately for his doctor is on a much higher plane. In practice this seems to mean that the higher brackets of income receive incomparably better service.

One cannot expect the impossible. Even with internal and external peace and general prosperity, the extension of medical education, practice and service to the Soviet Union as a whole at the standard we are accustomed to in our country could not be achieved in the short time that has elapsed since the Russian revolution. Considering their environment, the soviets have accomplished much. If the economic regeneration of Russia continues, there will be a steady rise in medical standards. But many of their fondest hopes will have to be realized before we shall be able to apply our yard-stick and find comparable values.

738 Broadway.

Association News

APPLICATIONS TO COMMITTEE ON SCIENTIFIC RESEARCH FOR GRANTS

The Committee on Scientific Research of the American Medical Association invites application for grants of money to aid in research on problems bearing more or less directly on clinical medicine. Preference is given to requests for moderate amounts to meet specific needs. For application forms please address the committee at 535 North Dearborn Street, Chicago.

RADIO BROADCASTS

The American Medical Association broadcasts over the Blue network and certain additional stations of the National Broadcasting Company at 5 p. m. eastern standard time (4 o'clock central standard time, 3 o'clock mountain time, 2 o'clock Pacific time) each Tuesday, presenting a dramatized program with incidental music under the general theme of "Medical Emergencies and How They Are Met." The title of the program is "Your Health." The program is recognizable by a musical salutation through which the voice of the announcer offers a toast: "Ladies and gentlemen, your health!" The theme of the program is repeated each week in the opening announcement, which informs the listener that the same medical knowledge and the same doctors that are mobilized for the meeting of grave medical emergencies are available in every community, day and night, for the promotion of the health of the people. Each program will include a brief talk dealing with the central theme of the individual broadcast.

The next three programs are as follows:

December 17. Animal Diseases in Man, W. W. Bauer, M.D.
December 24. No broadcast.
December 31. No broadcast.

This program is broadcast also on the short waves through KDKA, Pittsburgh, over station W8XK, 11,870 and 12,210 kilocycles.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ARIZONA

Annual Registration Due January 1.—Every person practicing medicine, surgery or osteopathy in Arizona is required by law to pay annually on or before January 1, to the board of medical examiners, a renewal license fee of $3. Any licentiate who does not renew his license as required is to be penalized $1 for each day that he practices without a renewal license, not to exceed $50. The board of medical examiners is to revoke the license of any licentiate who fails to renew his license for three successive years.

ARKANSAS

Society News.—A symposium on the menopause was presented before a joint meeting of the Garland and Sebastian county medical societies in Fort Smith, October 8; speakers were Drs. Walter G. Klugh, Arthur G. Sullivan, George B. Fletcher, Charles H. Lutterloh, William E. Gray and Gaston A. Hebert, Hot Springs National Park. The Garland County Medical Society participated and the Army and Navy Hospital cooperated in the fifth annual conference of the Leo N. Levi Memorial Hospital and the Charles Steinberg Clinic in Hot Springs National Park, October 15-16. Speakers included Dr. Joseph Earle Moore, Baltimore, "Diagnosis and Treatment of Neurosyphilis"; Dr. William B. Long, New York, "Medical Aspects of Syphilis in a General Hospital"; Chester N. Myers, Ph.D., New York, "Functional Disturbances of the Liver Following Antisyphilitic Therapy: Hepatitis and Acute Yellow Atrophy."——The Benton County Medical Society was addressed in Rogers, October 10, by Drs. Francis Walter Carruthers and George F. Jackson, Little Rock, on treatment of fractures and common diseases of the skin and their treatment, respectively.

CALIFORNIA

Annual Registration Due January 1.—Every practitioner of medicine and surgery holding a license to practice in California is required by law to register annually, on or before January 1, with the secretary-treasurer of the board of medical examiners and at that time to pay a fee of $2. Failure to pay the required fee within sixty days after January 1 works a revocation of a license and thereafter a license may be reissued only after application and the payment of a $10 penalty.

Symposium on Heart Disease.—The Los Angeles County Heart Association held its fourth annual symposium, December 6-7, in Los Angeles. A joint session with the Los Angeles County Medical Association was a feature of the program in the evening of the first day. Dr. Howard F. West, Los Angeles, presented "The Challenge of Arteriosclerosis," and Dr. John J. Sampson, San Francisco, "The Relation of the Autonomic Nervous System to Normal and Diseased Heart Function." The concluding session, Saturday morning, was given over to a clinical pathologic conference, case reports by clinicians and necropsy reports and demonstrations of specimens by pathologists.

Society News.—Dr. Louis E. Phaneuf, Boston, discussed "Surgical Treatment of Uterine and Vaginal Prolapse" before the Los Angeles Surgical Society at the annual dinner meeting, December 13.——At a meeting of the Orange County Medical Society in Orange, October 1, Dr. Karl E. Kretzschmar, Los Angeles, discussed "The Injection Treatment of Hernia."——Speakers before the Riverside County Medical Society in Riverside, October 14, were Drs. Samuel Ayres Jr. and Norman J. Kilbourne, Los Angeles; their papers were entitled "Infections of the Skin—Bacterial, Fungous and Parasitic" and "Elimination of Pain After Rectal Operation and in Rectal Treatment," respectively.——Dr. John B. Doyle, Los Angeles, discussed chronic alcoholism before the Santa Barbara County Medical Society in Santa Barbara, October 14.——Dr. Jay Marion Read has been chosen chairman of the heart committee of the San Francisco County Medical Society, Dr. John P. Strickler vice chairman, and Dr. Amos Christie secretary. The committee sponsors the annual heart symposium of the society, which this year was held November 20-21.

CONNECTICUT

Dr. Linde Named Health Officer of New Haven.—Dr. Joseph I. Linde, clinical professor of pediatrics, Yale University School of Medicine, has been appointed health officer of New Haven, succeeding Dr. Leonard Greenburg, who recently resigned to become associated with the New York State Department of Labor. A graduate of Yale, class of 1908, Dr. Linde is a past president of both the New Haven city and county medical societies. He is chairman of the committee on public health of the Connecticut State Medical Society and chairman for Connecticut of the American Academy of Pediatrics. He is 49 years of age.

Blood Test Mandatory in New Marriage Law.—The Connecticut State Department of Health announces that after January 1 each person applying for a marriage license must under law have a blood test. Under the new law, the applicant for a marriage license must let the family physician take a sample of blood, which he will send either to the laboratory of the state department of health or to one approved by the department. The test will be made and a report mailed to the physician on two forms, one, the usual laboratory report, for the physician to retain, and the other to be presented to the registrar. If the test is satisfactory the physician will sign his official statement and the applicant also signs, in the presence of the physician, the completed statement to be given to the registrar. On receipt of the physician's statement, the registrar will accept the application and on the fifth day following will issue the marriage license if both persons by that time shall have surrendered to him their physicians' statements. The department emphasizes that the blood test must be made not more than forty days before the license is issued, not forty days before the license is applied for.

FLORIDA

Annual Registration Due January 1.—Every practitioner of medicine and surgery holding a license to practice in Florida is required by law to register annually on or before January 1, with the secretary of the state board of health, and at that time to pay a fee of $1. A licentiate failing to register annually is liable to a fine of not more than $50.

Society News.—The Dade County Medical Society was addressed, November 1, by Drs. Joseph H. Lucinian and William C. Rentz, Miami, on "Radiation Treatment of Middle Ear and Mastoid Infections" and "Oral Sepsis," respectively. ——At a meeting of the Duval County Medical Society in Jacksonville, November 5, speakers were Drs. Samuel R. Norris on "Toxemias of Pregnancy—Case Histories with Autopsies," and Charles B. Mabry, "Use of Unpadded Plaster in the Treatment of Fractures." Both speakers were from Jacksonville.——Dr. Edwin C. Swift, Jacksonville, was named president of the Florida East Coast Medical Association, November 2. The next annual meeting will be held in Fort Pierce.——Dr. Mathew Jay Flipse, Miami, addressed the Palm Beach County Medical Society, October 25, on heart disease.

ILLINOIS

Personal.—Mr. Homer J. Byrd, Arlington Heights, has recently been appointed superintendent of registration of the state department of registration and examination.

Dramatized Broadcasts.—The Illinois Department of Health began a new series of dramatized broadcasts over Station WCBS in Springfield, December 2. The programs will be presented on Monday and Friday afternoons, portraying in the form of playlets the health adventures and experiences of the Hunter family, who live in the imaginary village of Utopia.

Society News.—Dr. Anton J. Carlson, Chicago, addressed a public meeting in Canton, November 25, on pneumonia; the session was sponsored by the Fulton County Medical Society. ——At a meeting of the DuPage County Medical Society in Downers Grove, November 20, Dr. Harry E. Mock, Chicago, discussed treatment of skull fracture.——Dr. Leo K. Campbell, Chicago, addressed the Will-Grundy County Medical Society, November 27, on "Diagnosis and Management of Diabetes Mellitus." The society was addressed by Dr. Maurice L. Blatt, Chicago, December 4, on "Neuromuscular Diseases in Childhood." —— At a meeting of the Peoria City Medical Society, December 3, Dr. Arthur Sprenger, Peoria, discussed "Recent Observations on the Etiology and Treatment of Urolithiasis." Dr. Leon M. Bogart, Flint, Mich., spoke, November 19, on "Abdominal Adhesions."——At a meeting of the Henry County Medical Society in Kewanee, November 7, speakers were Drs. Nathan S. Davis III and Robert O. Ritter, Chicago, who discussed coronary arteriosclerosis and fractures of the extremities, respectively.——The Mercer County Academy of Medicine was recently organized; meetings will be held twice each month, it was reported.

Chicago

Cooperative Study of Maternal Mortality.—Seventy-six hospitals cooperating in a study of maternal mortality in Chicago reported 270 maternal deaths in 1934. Of 38,139 mothers delivered in the hospitals, operative intervention was used for 7,765. There were 2,059 abortions reported and 248 ectopic pregnancies. This work is being sponsored by the maternal welfare committee of the Chicago Gynecological Society. The committee is made up of sixty-eight physicians, who represent the seventy-six hospitals in the city doing obstetric work. It is hoped to continue the study until data have been accumulated on 1,000 cases. More than 600 cases have already been studied (THE JOURNAL, August 10, p. 441).

Society News.—Dr. Chester C. Guy, among others, addressed the Chicago Pathological Society, November 11, on "Tumors of the Breast in Children."——Speakers before the Chicago Roentgen Society, November 14, included Dr. Bernard H. Nichols, Cleveland, on "Roentgenology in the Diagnosis of Obstructive Lesions of the Ureters."——Dr. Henry C. Sweany discussed "Recent Trends in the Approach to Study of Silicosis" before the Chicago Tuberculosis Society, November 15.—— At a meeting of the Chicago Ophthalmological Society, November 18, speakers included Dr. Philip D. O'Connor on "Correction of Cicatricial Ectropion by the Detached Skin Graft." ——Dr. Ben Z. Rappaport addressed the Chicago Society of Allergy, November 18, on "Treatment of Patients Highly Sensitive to Pollen."——The Chicago Neurological Society was addressed November 21, among others, by H. W. Magoun, Ph.D., and W. Kendrick Hare, M.S., on "Postural Reactions from Stimulation of the Interior of the Cerebellum."—— Dr. Harry C. Rolnick addressed the Chicago Urological Society, November 21, on "Retrovesical Sarcoma."—— The seventy-second annual midwinter meeting of the Chicago Dental Society will be held at the Stevens Hotel, February 17-20.

INDIANA

Outbreak of Scarlet Fever.—The occurrence of several cases of scarlet fever in Milan in November prompted the county health officer to order the schools in the city closed for several days, newspapers reported. An epidemic was also reported in Rensselaer, but reports, November 21, indicated it to be under control.

Gifts to Museum.—A collection of surgical instruments used by the late Dr. Joseph L. Gilbert, Kendallville, has been given to the Indiana University Medical Museum by his daughters, Mrs. Samuel L. Shank and Miss Clara Gilbert, Indianapolis, according to the state medical journal. Surgical needles, a mahogany case of surgical instruments, a rare copy of the second American edition of Gray's Anatomy and a copy of Samuel D. Gross's "Lives of Eminent American Physicians and Surgeons of the Nineteenth Century" are included in the collection. Dr. Gilbert died in 1928. A tourniquet of the Civil War period has been received from E. C. Clark of the Akron Surgical House, Indianapolis.

KANSAS

Personal.—Dr. Riley H. Miller, Ulysses, has been named health officer of Grant County.——Dr. John P. Kaster, Topeka, chief surgeon of the Atchison, Topeka and Santa Fe Railway system, was guest of honor at a banquet given recently in Topeka by the Santa Fe medical and surgical staff, in recognition of his completion of fifty years as a member of the staff.

Society News.—The Sedgwick County Medical Society was addressed, December 3, by Drs. Frances H. Schiltz and William P. Callahan, Wichita, on "Present-Day Status of Liver Function Tests" and "Surgical Treatment of Liver and Gallbladder Diseases," respectively. Dr. Richard L. Sutton, Kansas City, Mo., will address the annual meeting of the society and the woman's auxiliary, December 17; his talk will be entitled "Snapshots of the South Seas."

Data on Sickness Insurance.—The Kansas State Medical Society has prepared a publication dealing with sickness insurance and state medicine to be used by high school and college students in preparing arguments for the debates on state medicine being held throughout the country. This material supplements that which is being sent to high school and college students from the Bureau of Medical Economics of the American Medical Association.

LOUISIANA

Annual Renewal Due January 1.—Every practitioner of medicine and surgery holding a certificate to practice in Louisiana is required by law to have his certificate renewed annually, on or before January 1, by the secretary-treasurer of the state board of medical examiners, and at that time to pay a fee of $2. The board may by unanimous vote revoke any certificate not renewed.

Health at New Orleans.—Telegraphic reports to the U. S. Department of Commerce from eighty-six cities with a total population of 37 million, for the week ended November 30, indicate that the highest mortality rate (18.3) appeared for New Orleans and that the rate for the group of cities as a whole was 11.1. The mortality rate for New Orleans for the corresponding period last year was 17.3 and for the group of cities as a whole, 10.9. The annual rate for eighty-six cities for the forty-eight weeks of 1935 was 11.3 and the same rate appears for the corresponding period of the previous year. Caution should be used in the interpretation of these weekly rates, as they fluctuate widely. The fact that some cities are hospital centers for large areas outside the city limits or have a large Negro population may tend to increase the death rate.

MASSACHUSETTS

Dr. Rosenau Gives Cutter Lecture.—Dr. Milton J. Rosenau, Charles Wilder professor of preventive medicine and hygiene, emeritus, Harvard Medical School, Boston, delivered the Cutter Lecture on Preventive Medicine, December 4, at the medical school. He discussed "Epidemics."

Physician Honored.—Dr. Fred B. Lund, formerly surgeon-in-chief, Carney Hospital, Boston, was honored by a testimonial dinner at the Harvard Club, November 6. Dr. William E. Browne was toastmaster. The speakers included Drs. John Cunningham Jr., Louis F. Curran, Louis E. Phaneuf, William H. Robey, Irving J. Walker, Archibald McKay Fraser, William R. Morrison, Boston, and Nathaniel S. Hunting, Quincy. Dr. Lund was presented with a ship's wheel mantel clock as a memento of the occasion.

Society News.—The South End Medical Club was addressed by Dr. Francis Lowell Burnett, Boston, November 19, on "New Principles for Normal Nutrition and Health to Cure Disease." —— At a meeting of the New England Ophthalmological Society in Boston, November 12, Dr. Harry C. Messinger, Providence, R. I., discussed "Tuberous Sclerosis with Tumor of Optic Nerve" and Dr. Phillips Thygeson, Iowa City, gave a paper entitled "Etiology of Trachoma, Analysis of Recent Studies."——Speakers before the Worcester District Medical Society in Grafton, November 13, were Drs. Charles E. Mongan, Somerville, president of the state medical society; Benjamin M. Cohen, Cambridge, "Repression and Communicability in Catatonic Stupor," and Bardwell H. Flower, Worcester, "Parenteral Paraldehyde." —— Dr. Frederick F. Russell, lecturer in preventive medicine and hygiene, Harvard Medical School, discussed "Recent Studies in Yellow Fever—A Virus Disease" before the Harvard Medical Society, November 12, in Boston.

MICHIGAN

Personal. — Mr. J. A. Bechtel has been appointed acting executive secretary of the Wayne County Medical Society. William J. Burns recently resigned as executive secretary of the society to accept a similar position with the state medical society.——Dr. Frank D. Johnson has resigned as coroner of Genesee County, and Dr. Rhudolph W. Streat has been named to succeed him. Both are from Flint.

Pediatric Meeting.—The University of Michigan Pediatric and Infectious Disease Society held its annual meeting in Ann Arbor, November 22-23. Speakers included Drs. Williams McKim Marriott, St. Louis, on "Severe Nutritional Diseases in Infancy and Childhood," and Clement A. Smith, Boston, "Calcified Abdominal Glands in Children." Dr. Daniel Budson, Detroit, gave the presidential address Friday evening, and Dr. Marriott held an open forum on infant feeding.

Psychiatric Parole Clinic.—A psychiatric parole clinic has recently been established at Eloise Hospital with Dr. Martin H. Hoffmann in charge. Present plans call for a staff of eight psychiatrists, nine psychiatric social workers and one psychiatric nurse. Under the new system, mental patients in county institutions will be examined and classified and the mild ones returned home. An efficient follow-up system will be established to secure constant supervision of these people, and accommodations obtained for those who require hospitalization but are now at large for want of adequate facilities. Dr. Hoffmann is secretary of the Wayne County Medical Society and the Detroit Society of Neurology and Psychiatry. He graduated from State University of Iowa College of Medicine.

Society News.—Dr. Edward L. Bauer, Philadelphia, discussed "Athrepsia, Acidosis and Alkalosis in Childhood" before the Calhoun County Medical Society, November 5, in Battle Creek.——Sir Wilfred T. Grenfell, St. Anthony, Newfoundland, addressed the Wayne County Medical Society, Detroit, December 2. He also delivered a public lecture in the Hotel Statler, Detroit, November 29. Dr. Oliver P. Kimball, Cleveland, also spoke before the medical society at its meeting, December 2, on "Source and Medical Study of Epilepsy."—— Dr. Myron Metzenbaum, Cleveland, addressed the Michigan Triological Society at Grand Rapids, November 21, on "Reconstruction of the Nasal Septum in Children."——A symposium on syphilis constituted the program of the West Side Medical Society of Detroit, at Eloise, November 6; speakers were Drs. Arthur E. Schiller, Frank W. Hartman and Robert C. Jamieson, and Elizabeth M. Yagle, Ph.D.——Dr. Abraham R. Hollender, Chicago, addressed the Detroit Otolaryngological Society, November 20, on "The Scope of Physical Therapy in Otolaryngology."

MINNESOTA

Handbook on Sickness Insurance.—The Minnesota State Medical Association has prepared a forty-eight-page handbook dealing with the various aspects of sickness insurance and state medicine, supplementing material available from the Bureau of Medical Economics of the American Medical Association. Excerpts from talks, newspapers and current magazines are included, representing the opinions of certain members of the medical profession, clergymen and lay authorities on the subject. The material is copyrighted but may be used by members of the constituent societies of the American Medical Association. Information concerning the handbook may be obtained from the office of the association, 11 West Summit Avenue, St. Paul.

Dinner to Drs. Will and Simons.—The Sixth Councilor District Medical Society gave a dinner in St. Cloud, November 21, in honor of Dr. William W. Will, Bertha, president-elect, Minnesota State Medical Association, and Dr. Edwin J. Simons, Ah Gwah Ching, newly elected councilor of the district. Officers and committee chairmen of the district attended and speakers included Drs. Morris Fishbein, editor of THE JOURNAL, Chicago; Charles B. Wright, Minneapolis; Jay Arthur Myers, Minneapolis, and Sidney A. Slater, Worthington. Drs. Fishbein and Myers and Edward A. Meyerding, St. Paul, secretary of the state medical association, addressed a public health meeting the same evening, sponsored by the Stearns County Public Health Association and the Minnesota Public Health Association.

MISSISSIPPI

Society News.—A health education conference for parents and teachers of Pike County was held in McComb, October 25-27. Speakers included Drs. Felix J. Underwood, state health officer; John A. Milne, Jackson, director of the field unit, state board of health, "Community Organization and Parent Responsibility"; Taswell Paul Haney Jr., McComb, health officer of Pike County, "Development of Uniform Standards for Medical Examination," and Henry C. Ricks, Jackson, "Practical Measures in Communicable Disease Control."

A New State Journal.—Beginning January 1, the Mississippi State Medical Association will publish its own journal entitled the *Mississippi Doctor*. The state society will share this publication with the Northeast Mississippi Thirteen County Medical Society, the North Mississippi Medical Society and the Mid-South Postgraduate Medical Assembly. It will be printed in Mississippi with Dr. William H. Anderson, Booneville, as editor. The *New Orleans Medical and Surgical Journal* has for many years been the official journal of the Mississippi State Medical Association. Publication of the new journal was approved at the annual meeting of the society in May.

NEW JERSEY

Program on Automobile Injuries.—At a meeting of the Associated Physicians of Montclair and Vicinity, October 25, in Montclair, three speakers from New York discussed automobile injuries. Dr. William Darrach spoke on first aid treatment, Dr. Armitage Whitman on injuries to joints, and Dr. James M. Hitzrot on injuries to soft parts. Papers were discussed by Drs. Toufick Nicola, New York, Leslie C. Love, Montclair, and Richard T. Hobart, Upper Montclair.

Society News.—Dr. Thomas H. Russell, New York, addressed the Bergen County Medical Society, Hackensack, November 12, on "Postoperative Complications and Their Man-

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agement," and Dr. Leroy A. Wilkes, Trenton, executive secretary of the Medical Society of the State of New Jersey, discussed the organization and functions of the society.——The Society of Surgeons of New Jersey will meet in Jersey City, January 15, and not Atlantic City, as noted in THE JOURNAL, November 9. Clinics will be held at the Jersey City Medical Center in the afternoon and a dinner at the Carteret Club.—— A symposium on endocrinology was presented at a meeting of the Middlesex County Medical Society at the State Home for Boys, Jamesburg, November 20, by Drs. Edward Rose and Charles Mazer, Philadelphia; Matthew Molitch, Jamesburg; Albert W. Pigott, Skillman, and Maximilian A. Goldzieher, Brooklyn. Several papers were presented by members of the resident staff of the school.——Dr. Leonard G. Rowntree, Philadelphia, addressed the Atlantic County Medical Society, Atlantic City, November 8, on endocrine therapy.—— Drs. Louis L. Williams Jr. of the U. S. Public Health Service and David L. Farley, Philadelphia, addressed the Camden County Medical Society, Camden, November 5, on "Malaria—Its Prevention and Treatment" and "Fever of Undetermined Origin," respectively.

NEW YORK

Appointments at Albany College.—Dr. Thomas Ordway, dean of Albany Medical College, recently announced the appointment of Dr. Harry E. Himwich, associate professor of physiology at Yale University School of Medicine, as assistant professor of physiology, succeeding Dr. F. Stanley Randles, resigned. Joseph L. Schwind, Ph.D., associate professor of anatomy at Georgetown University School of Medicine, Washington, D. C., was appointed to that position at Albany, succeeding Donald H. Barron, Ph.D. Dr. Barron has resigned to pursue research at Oxford University, England.

Annual Registration Due January 1.—Every practitioner of medicine and surgery in New York is required by law to apply annually, on or before January 1, to the secretary of the board of medical examiners for a certificate of registration, on application forms furnished by him, and to pay at that time a fee of $2. The law authorizes the secretary of the board to permit secretaries of duly incorporated medical societies to act as his representatives, to receive and transmit to him such applications and fees. Practitioners are liable to severe penalties for failing to register and for continuing in practice thereafter.

Graduate Lectures at Rochester.—A course of lectures arranged by the Medical Society of the State of New York and the Medical Society of the County of Monroe was given at the Rochester Academy of Medicine, October 21-25. Speakers were the following New York physicians:

Dr. Fred W. Stewart, The Changing Concept of Radiosensitivity of Tumors.
Dr. Robert T. Frank, Keeping Up with Endocrinology.
Dr. Russell L. Cecil, Chronic Arthritis.
Dr. Edward M. Livingston, General Abdominal Surgical Diagnosis.
Dr. Ralph G. Stillman, Laboratory Tests and Methods: Their Interpretation into Clinical Terms.

New York City

Gifts to Columbia.—Among gifts to Columbia University recently announced by the secretary are the following for medical purposes:

General Education Board, $17,000 for the subdepartment of tropical medicine and the child development clinic of the Neurological Institute.
W. K. Kellogg Foundation, $10,000, for study of rheumatic fever.
Rockefeller Foundation, $2,500 for research in department of practice of medicine and $750 for the department of psychiatry.
E. R. Squibb and Sons, $2,250 for fellowship fund in the department of biologic chemistry; $1,000 for fellowship in the department of anatomy.
Commonwealth Fund, $1,750 for the normal child development clinic in the Neurological Institute.
Hartley Corporation, $1,750 for research in the department of psychiatry.
William J. Matheson Foundation, $1,125 for the Matheson Encephalitis Fund in the department of bacteriology.
Louis D. Beaumont Trust, $1,000 for research in the institute of cancer research.
Arthur M. Lamport, $1,000 for the Louis Wiley Memorial Fund in Neurology.

Dr. Bowman Director of Psychiatric Division.—Dr. Karl M. Bowman, chief medical officer of the Boston Psychiatric Hospital, has been appointed director of the psychiatric division of Bellevue Hospital, a position made vacant by the resignation of Dr. Menas S. Gregory in 1934. Dr. Bowman was chosen by competitive examination. A graduate of the University of California School of Medicine, Dr. Bowman has recently been assistant professor of psychiatry at Harvard Medical School and assistant professor of clinical psychiatry at Boston University School of Medicine. Dr. Gregory has been appointed consulting psychiatrist for Bellevue.

Society News.—Drs. George P. Muller, Philadelphia, Shepard Krech and Frederic W. Bancroft presented a symposium on mortality in acute appendicitis at a meeting of the New York Surgical Society, November 27.——Drs. Vernon C. Rowland, Cleveland, and Samuel J. Goldfarb addressed the National Society for the Advancement of Gastro-Enterology, November 27, on "Continuous Acid Adsorption by Aluminum Hydroxide Cream in the Treatment of Peptic Ulcer."—— Dr. Walter Bauer, Boston, addressed the Medical Society of the County of Kings, November 19, on arthritis. A portrait of the late Dr. Frank D. Jennings was presented to the society by the alumni association of St. Catherine's Hospital.

NORTH CAROLINA

New Special Society.—The North Carolina Eye, Ear, Nose and Throat Society was organized at a meeting in Greensboro, November 14, with Drs. Burton W. Fassett, Durham, as president and Casper W. Jennings, Greensboro, as secretary. The final action followed tentative organization last spring under the name North Carolina Academy of Ophthalmology and Otolaryngology. At this meeting speakers were Drs. William S. Jordan, Fayetteville, on "The Responsibility of the Refractionist"; Michel M. Saliba, Wilson, "A New Theory of Light Perception"; Alvin C. McCall, Asheville, "Glaucoma"; Joseph B. Greene, Asheville, "Diagnosis and Treatment of Laryngeal Tuberculosis"; Harry C. Willis, Wilson, "Nasal Neuralgia," and Fred E. Motley, Charlotte, "Mastoidectomy."

Society News.—Dr. Ralph Rhett Rathbone, Washington, D. C., was the chief speaker at a meeting of the North Carolina Radiological Society at Greensboro, October 27, on "Treatment of Sinus Diseases and Miscellaneous Diseases."—— Dr. Edgar V. Allen, Rochester, Minn., addressed the Buncombe County Medical Society, Asheville, November 4, on "Peripheral Vascular Diseases."—— Drs. Joseph A. Elliott, Charlotte, and James D. Whaley, Charleston, S. C., addressed the Catawba Valley Medical Society, Lenoir, recently, on skin diseases and nontuberculous infections of the kidney.——At the October meeting of the Tenth District Medical Society, Tryon, speakers included Drs. Paul T. McBee, Marion, on "Surgical Treatment of Peptic Ulcers," and Cecil C. Swann, Asheville, "Relationship of Sinus Disease and Chronic Chest Conditions, Particularly Asthma and Bronchiectasis."—— Dr. Fred M. Patterson, Greensboro, was elected president of the North Carolina Urological Association at the sixth annual meeting in Salisbury in October.——Dr. John Shelton Horsley, Richmond, addressed the Guilford County Medical Society, High Point, November 7, on "Modern Trends in Diagnosis and Treatment of Cancer of the Colon." Dr. James W. Tankersley, Greensboro, presented a paper on "Lesions of the Breast."

NORTH DAKOTA

Annual Registration Due January 1.—Every practitioner of medicine and surgery holding a license to practice in North Dakota is required by law to register annually on or before January 1, with the secretary-treasurer of the board of medical examiners, and at that time to pay a fee of $5 if a resident of North Dakota, or $2 if a nonresident. A practitioner may not lawfully practice if he has not registered. If he does so his license may be revoked and can be reinstated on the payment of unpaid fees and $0.50 for each month of default.

PENNSYLVANIA

Society News.—Dr. William J. Fetter, Pittsburgh, addressed the Fayette County Medical Society, Uniontown, December 5, on "Bone Conditions Important in Medicine."——Dr. Samuel J. Kopetzky, New York, will address the Harrisburg Academy of Medicine, December 17, on "Petrosal Suppuration."

Annual Registration Due January 1.—Every practitioner of medicine and surgery holding a license to practice in Pennsylvania is required by law to register annually, on or before January 1, with the board of medical education and licensure in the department of public instruction and to pay a fee of $1 or such fee as may be fixed by the department of public instruction. A practitioner who fails to register and who continues to practice is liable to a fine of from $10 to $100.

Philadelphia

Advisory Committee on Health Survey.—At the request of Surgeon General Hugh S. Cumming of the U. S. Public Health Service, the president of the Philadelphia County Medical Society has appointed an advisory committee for the health survey being made by the service. Members are Drs. Francis F. Borzell, Edward L. Bortz, Francis Ashley Faught, Donald R. Ferguson, W. Burrill Odenatt and Joseph W. Post, and John W. Ross, D.D.S.

Society News.—Dr. Harris P. Mosher, Walter Augustus Lecompte professor of otology and professor of laryngology, Harvard Medical School, Boston, gave the Mütter Lecture,

College of Physicians of Philadelphia, December 4, on "Histology and Pathology of the Esophagus with Clinical Application."——The annual banquet of the Medical Alumni Association of the Medico-Chirurgical College was held November 21, with Dr. Ralph H. Spangler as toastmaster; Dr. James Evans Scheehle, Harrisburg, secretary of welfare of Pennsylvania, was a guest of honor. Dr. Jesse Lynn Mahaffey, commissioner of health of New Jersey, Trenton, was elected president.——The Philadelphia League for the Hard of Hearing, the Germantown Club for the Hard of Hearing and the Speech Reading Club of Philadelphia observed National Hearing Week in October with exhibitions of hearing aids and demonstrations of lip reading. ——A symposium on peptic ulcer was presented before the Philadelphia County Medical Society, December 11, by Drs. Robert A. Kilduffe, Atlantic City, N. J., who discussed laboratory observations; Donald Guthrie, Sayre, surgical aspects; Martin E. Rehfuss, medical aspects, and Willis F. Manges, roentgen examinations.

TEXAS

Annual Registration Due January 1.—Every practitioner of medicine and surgery holding a license to practice in Texas is required by law to register annually on or before January 1, with the state board of medical examiners, and at that time to pay a fee of $2. If a practitioner fails to renew his registration within sixty days after January 1, his license is suspended.

Specialists' Meetings.—Dr. Charles W. Flynn, Dallas, was elected president of the Texas Surgical Society at its semi-annual meeting in Galveston in October. Guest speakers at the meeting were Drs. William T. Pride, Memphis, Tenn., on "Anesthesia and Analgesia in Operative Gynecology—End Results," and John R. Caulk, St. Louis, "Surgery of the Ureter." ——Dr. Emil Novak, Baltimore, was guest speaker before the Texas Association of Obstetricians and Gynecologists in Fort Worth, December 7. He delivered the J. F. Y. Paine address in the afternoon on "Hormones of the Ovary" and spoke at the evening banquet on "Current Problems in Gynecology." Dr. Ben Hill Passmore, San Antonio, president of the association, delivered his official address, on "The Influence of Prejudice and Superstition in Obstetrics."

Medical Service for Low Income Groups.—Two plans for distribution of medical service to low income groups have been approved by the executive council of the Texas State Medical Association. After a study of numerous plans, a special committee appointed at the last meeting of the association evolved a plan for larger county societies, based on one now in operation in Bexar County. The essential feature of the Bexar County plan is a medical service bureau, with a physician as full time executive officer. The functions of the bureau are to study the economic circumstances of the individual patient, classify him as to his ability to pay for medical service, and arrange for the instalment payment for such service. If he cannot pay anything he may either be cared for by the physician of his choice as a charity patient or he may be sent to a free clinic. A special arrangement is outlined for control of these clinics. They are asked to cooperate with the county society to the extent of employing a competent investigator to check the financial condition of applicants, which is to be reported to the bureau. According to the budget plan, the patient signs an instalment note and pays interest on deferred payments. The bureau retains 10 per cent of all moneys collected to defray overhead expenses. The committee also recommends systematic publicity to inform the public of the society's efforts to provide a means for adequate distribution of medical service. A modified version of this set-up is proposed for small county societies, with the suggestion that several counties may conveniently combine their economic activities in sparsely settled regions. Dr. Edward H. Cary, Dallas, was chairman of the special committee that drew up the plans, and members were Drs. Samuel E. Thompson, Kerrville; Witten B. Russ, San Antonio; Claude C. Cody, Houston, and Frederick Fink, San Antonio.

WEST VIRGINIA

Society News.—Dr. Henry J. John, Cleveland, addressed the Ohio County Medical Society, Wheeling, November 8, on "Routine Treatment of Diabetes Mellitus."——Dr. Americus J. Kemper, Clarksburg, was elected president of the West Virginia Public Health Association at the annual meeting in Huntington, October 30.——Drs. Chesney M. Ramage and Amos H. Stevens, Fairmont, addressed the Central West Virginia Medical Society, Buckhannon, October 26, on cancer and treatment of tetanus, respectively.——Dr. Walter W. Spelsberg, Clarksburg, addressed the Monongalia County Medical Society, Morgantown, November 5, on "Ear Conditions in General Practice."——Drs. Russel Kessel and Vincent T. Churchman Jr. addressed the Kanawha County Medical Society, Charleston, November 12, on "Pelvic Inflammatory Disease" and "The Common Cold," respectively. ——Dr. Thomas G. Folsom, Huntington, presented a paper on "Progress of Rheumatic Heart Disease" at the November meeting of the Cabell County Medical Society, Huntington.

GENERAL

Bequests and Donations.—The following bequests and donations have recently been announced:

University of Cincinnati College of Medicine, $2,500 for a research fund in internal medicine from Mrs. Louis N. Stix; $1,000 for the Gamble Fund in the department of bacteriology from Mrs. Alfred K. Nippert, and $500 for the hepatic research fund in biochemistry from the Union Central Life Insurance Company.

Mount View (Marathon County Tuberculosis Sanatorium), Wausau, Wis., $50,000 by the will of Mrs. Eva M. Willard.

St. Joseph's Hospital, Paterson, N. J., $2,000; General and Barnert Memorial hospitals, Paterson, $1,000 each under the will of William B. Gourley.

Methodist Hospital, Scottsbluff, Neb., $3,000 by the will of J. T. Ryan, Ogallala.

Stuyvesant Square Hospital, now known as the New York Skin and Cancer Hospital unit of the New York Post-Graduate Medical School and Hospital, $15,000 from the estate of Miss Helen R. Johnson, Bennington, Vt.

Poliomyelitis Funds Allocated.—The balls held on President Roosevelt's birthday, last January 30, raised $1,071,000 for aid in fighting poliomyelitis, it was recently announced. Seventy per cent of the receipts was turned back to the communities in which they were raised. The remaining 30 per cent was retained by the committee, which had $241,000 after paying expenses. Of this amount $110,000 was allocated in grants for research on poliomyelitis to the following institutions under the direction of the investigators indicated: Harvard University, Boston, Dr. William Lloyd Aycock; Long Island College of Medicine, Brooklyn, Dr. Sidney D. Kramer; New York University, Dr. William H. Park; University of Chicago, Dr. Paul H. Harmon; University of Pennsylvania, Philadelphia, Dr. Joseph Stokes Jr.; Stanford University, Dr. Edwin W. Schultz; University of California, Hooper Foundation, San Francisco, Karl F. Meyer, Ph.D.; University of Southern California, Los Angeles, John F. Kessel, Ph.D.; Western Reserve University, Cleveland, Dr. John A. Toomey, and Yale University, New Haven, Conn., Drs. John R. Paul and James D. Trask. The remaining funds will be used for grants to other projects or further grants to the same projects, in accordance with recommendations of an advisory committee consisting of Drs. George W. McCoy of the U. S. Public Health Service, Washington, D. C.; Max M. Peet, Ann Arbor, Mich., and Donald B. Armstrong of the Metropolitan Life Insurance Company, New York. No receipts were given to the Warm Springs Foundation, Warm Springs, Ga., this year. All last year's funds went to the Georgia institution.

Society News.—The Southeastern branch society of the American Urological Association held its second annual meeting in Nashville, Tenn., December 6-7. Among speakers were Drs. Burnett W. Wright, Los Angeles, on "Urinary Complication in an Epidemic of Poliomyelitis"; Hugh Cabot, Rochester, Minn., "Methods of Diverting the Urine Above the Level of the Bladder"; George G. Smith, Boston, "Total Prostatectomy for Cancer of the Prostate," and Thomas J. Kerwin, New York, "Present Value of Electrical Methods in the Treatment of Certain Urologic Conditions."——Officers elected at the annual meeting of the American Academy of Tropical Medicine in St. Louis, November 20-21, are Drs. Richard P. Strong, Boston, president; Wilbur A. Sawyer, New York, vice president, and Ernest Carroll Faust, Ph.D., New Orleans, secretary. At this meeting the American Foundation for Tropical Medicine was organized, with Dr. Earl B. McKinley, Washington, D. C., as executive secretary.——The seventh annual open meeting of the American Society for the Study of Arthritis was held in New York, December 12, at the New York Academy of Medicine. Papers were presented by Drs. Reginald Burbank, New York, on "Treatments in Arthritis"; Loring T. Swaim, Boston, "Prevention of Deformities in Arthritis," and Martin E. Rehfuss, Philadelphia, "Experimental Arthritis and the Treatment of That Disease from the Gastro-Enterological Viewpoint."——The Eastern Conference of Radiologists will be held in Baltimore, January 31-February 1, with headquarters at the Lord Baltimore Hotel. Further information about the conference may be obtained from Dr. Charles A. Waters, 1100 North Charles Street, Baltimore.——Dr. Frederick M. Hodges, Richmond, Va., was elected president of the Southern Medical Association at the annual meeting in St. Louis, November 20, and Drs. Quitman U. Newell, St. Louis, and Joseph E. Knighton, Shreveport, La., vice presidents. Baltimore will be the meeting place in 1936.

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Foreign Letters

LONDON

(From Our Regular Correspondent)

Nov. 16, 1935.

Accident-Proneness

In an address at the Insurance Institute of London, Mr. Eric Farmer, reader in industrial psychology at Cambridge University, said that statistical research showed that in any group of individuals exposed to similar risks the majority of the accidents involved a small number and that accident-proneness was a relatively stable individual characteristic, which manifested itself whenever the opportunity was given. Accident-proneness was now recognized as one of the chief causes of accident. How were the accident prone to be detected so that they may avoid being a danger to themselves and to others? One way was by psychologic and other tests, which measured the qualities involved in accident-proneness, so that it was possible to predict which people were most likely to be involved in accidents. An alternative method was to see whether the knowledge gained by statistical means concerning the accident prone could be given practical effect. To judge in any particular case whether the number of previous accidents was a clear indication of accident-proneness, it was necessary to know by how much that number exceeded the average of the group of drivers to which the individual belonged. If the acquisition of this knowledge proved possible and the results confirmed those already obtained, some means might be devised of preventing the small number of people who are found to be highly accident prone from driving. An effective inquiry would require the cooperation of the government and the insurers. Valuable knowledge might be collected concerning those involved in road accidents if for a period of, say, five years every motorist when applying for a license should be required to produce a certificate from his insurers giving the type of policy that he held, the period of holding and the claims made.

The Myth of Race

A book entitled "We Europeans: A Survey of Racial Problems," by Julian S. Huxley, D.Sc., secretary of the Zoological Society, A. C. Haddon, F.R.S., Sc.D., formerly reader in Ethnology, University of Cambridge, and A. M. Carr-Saunders, professor of social science in the University of Liverpool, has just been published. Dr. Haddon is a leading British anthropologist, Dr. Julian Huxley, the grandson of the famous zoologist, is a foremost exponent of the modern doctrine of heredity, and Professor Carr-Saunders is well known as a writer on social and statistical subjects. The authors discuss the principles of human heredity, the bases of ethnic classification, and the main ethnic groups of Europe and Europe overseas. At this time it is interesting to read the latest views of leading British experts. They use the term "ethnic group" instead of "race," as they hold that race in the current conception does not exist in Europe. There are different physical types of man, but crossing has always been widespread and therefore no such thing as a pure race exists. A common popular fallacy is to regard a nation as a race. The unity that underlies the conception of "nation" is cultural, not racial, and every nation is composed of many physical types. With them are found numerous intermediate types and some widely aberrant types. The intermediate types are not due to blending of discrete characters but to mendelian recombinations. Thus in Devon and Cornwall are seen individuals combining light eyes with dark hair, characters derived from the Saxon type on one side of the border with the British type on the other. However, in reviewing this book Sir Arthur Keith differs somewhat with the authors on the question of race. He says: "Races, as the zoologist knows them, have disappeared from Europe; civilization has broken them up and there has come into being, to take their places, a multitude of nationalities. Each nation represents an evolutionary unit—an incipient race. If frontiers could be fixed and national aloofness maintained over many thousands of years, races distinctive in a physical sense would emerge." But Keith's view is supplementary rather than contradictory to the authors' teaching. Moreover, it is known that before the dawn of history the crossing of racial types took place and that nowhere in the historical period has the "national aloofness" for thousands of years, postulated by Keith, been maintained. Of the United States, Keith says: "The people there have been recruited from all the countries and races of Europe. Yet in mind they have become 100 per cent American. And if their national spirit and frontiers hold for some 5,000 years they will become 100 per cent American in body too."

Examining the claims for what is called "the Nordic race," the authors point out that the fundamental discoveries of civilization are the art of writing, agriculture, the wheel and building in stone. All these originated in the Near East, among peoples who by no stretch of imagination can be called Nordic. In the classical period Aristotle gave reasons why the Nordic barbarians as well as the Asiatic peoples were incapable of rising to the level of the Greeks. The northern peoples, he said, though endowed with plenty of spirit, are wanting in intelligence and skill, while the reverse held for the Asiatics. But the Greeks were endowed with both sets of qualities.

The Nordic myth in Germany is also exposed. The Germans are found to be a mixture of the Nordic and Eurasiatic (Alpine) races, of which the latter type is now predominant. The view that Germany owes her achievements to the Aryan or Nordic elements is also shown to be wrong. The Nordic type is tall, fair and long headed. But, as Weidenreich has shown, the greatest Germans, including Beethoven, Kant, Schiller, Leibnitz and Goethe, were all moderately or extremely round headed (cephalic indexes from 84 to 92). In a recent book the nationalist German anthropologist Kossina is in such difficulties that he has to abandon the racial conception and say that "Nordic souls may often be combined with un-Nordic bodies." The authors conclude that racialism is a dangerous myth—a cloak for selfish aims, which in their uncloaked nakedness would look ugly enough.

Voluntary Euthanasia

The formation of the Voluntary Euthanasia Legalization Society has been described in previous letters. Further particulars can now be given as to the bill allowing sufferers from painful and incurable disease to anticipate death. The procedure laid down is as follows: 1. The person desiring to receive euthanasia must be not less than 21 years of age and must be suffering from a disease involving severe pain and of an incurable and fatal character. 2. He must make an application in writing on a special form and must sign it in the presence of two witnesses, one of whom must be an official witness—a magistrate, lawyer, physician or minister of religion. 3. Before applying, the patient must have consulted his nearest relative and set his affairs in order. 4. The application must be sent to a euthanasia referee (to be appointed by the minister of health) accompanied by medical certificates on special forms. One of these certificates must be signed by the physician in attendance on the patient and the other by a physician having certain qualifications or status to be prescribed by the minister of health. 5. The euthanasia referee on receiving the application and before granting permission for euthanasia must satisfy himself by a personal interview with the patient and otherwise that the requisite conditions have been fulfilled and that the patient understands the nature and purpose of the application. 6. Permission to receive euthanasia shall not operate until the expiration of seven days from the date when the euthanasia referee sends the permit to the patient. The referee shall, on

sending the permit, notify the nearest relative that permission has been granted. 7. Within three days of receiving such notice the nearest relative may appeal to a court on the ground that one or more of the requisite conditions have not been fulfilled, and the court may cancel the permit. 8. Euthanasia shall not be administered by other than a physician named in the permit and shall be administered in the presence of one of the official witnesses.

The consultative medical council of the society is an influential body composed of leaders of the medical profession. The president is Lord Moynihan and the vice presidents are Sir Humphry Rolleston and Sir W. Arbuthnot Lane. The moving spirit is the secretary, Dr. Killick Millard, who was formerly a health officer and published in 1931 in *Public Health* an article entitled "Euthanasia—A Plea for the Legalization of Voluntary Euthanasia."

PARIS

(From Our Regular Correspondent)

Nov. 1, 1935.

The French Surgical Congress

The second subject chosen for general discussion at the meeting of the forty-fourth French Surgical Congress was "Fractures of the Os Calcis." An exhaustive review of this question was given by Paitre and Boppe. Fractures involving the articular surfaces are the most serious from the standpoint of prognosis. They usually mean an invalidity of five or six months and, even when consolidation has taken place, there is much functional disability, the pain on walking often persisting for two years, as the result of a chronic subastragalar arthritis. The severity of the fracture and that of its sequelae are not at all in direct relation to each other. The anatomic reduction of a fracture of the os calcis is very difficult. One should never wait longer than a week to attempt reduction by nonoperative or operative methods. Every effort must be made to maintain the reduction either by the instrumental (nail) method of Böhler or by noninstrumental extension applied direct to the greater tuberosity.

Paitre and Boppe have observed twenty cases treated by the nail method at Böhler's clinic in Vienna during 1933-1934 and followed up at intervals of from six months to two years after the injury. Aside from a few cases in which horizontal or vertical impaction had taken place, perfect anatomic reduction followed Böhler's first (nail) method. From the functional standpoint the results were not above criticism. Aside from a rarefying osteitis, which persisted for five or six months, the patients were unable to walk well until after about the same period. Any movement of the astragalocalcaneal joint is followed by sharp pain and this continues for about a year after the injury, but ankylosis of the joint between the astragalus and the os calcis persists in 70 per cent of the cases.

Leriche has advocated immediate operative reduction followed by fixation, but Paitre and Boppe believe that one should be very conservative in this direction, because too many cases have been observed in which a 40 to 50 per cent invalidity resulted because of poor technic.

Operative and nonoperative methods of reduction are a step forward in the treatment of these difficult fractures, but they still need to be evaluated. Böhler has had better results than have the advocates of operative reduction, but the latter is only of comparatively recent origin. Fixation by mechanical means is preferable to bone grafts if operation is decided on.

In the discussion, Böhler of Vienna showed in a film the various steps of his technic. He has treated 200 cases, and in 88 per cent of these no functional disability has resulted.

Jimeno-Vidal of Barcelona, basing his opinion on a large number of cases observed at Böhler's clinic and on fifty personal observations at Barcelona, maintained that the orthopedic method was far better than open reduction.

Herman of Antwerp endorsed this point of view. The scar following operation remains painful for such a long time that it causes disability in a certain number of cases, as serious as in cases in which no treatment at all has been given.

Leriche of Strasbourg prefers open reduction and fixation of the fragments by mechanical means and is opposed to nail extension as advocated by Böhler. He defended the incision on the outer surface followed by temporary division of the peronei tendons. If the latter are carefully sutured, no disturbance of movement of the foot results.

Trueta-Raspall of Barcelona, after an experience of forty-three cases, is opposed to the nail extension method of Böhler. Open reduction does not give better results than orthopedic treatment. Lateral compression and extension for twenty-five days followed by immobilization for ten weeks have appeared to him the most rational treatment. Any disability persisting more than a year can be considered as permanent.

Chavannaz of Bordeaux was pessimistic regarding fractures of the os calcis. He has seen a 25 to 30 per cent permanent disability in twenty of twenty-two cases. Inadequate reduction, the type of fracture, the changes in the soft tissues, and allowing the patient to walk too early are the chief causes of poor end results. Modern orthopedic and surgical procedures offer better prospects than the older methods of treatment.

Hamant and Grimault of Nancy maintained that their results in forty-two cases treated by the older methods were better than is generally believed to be the case, only an average permanent disability of 10 per cent being noted by them. If orthopedic methods do not give a satisfactory result, operative intervention is indicated. Open fractures demand the most careful attention to prevent serious complications.

OPERATIONS ON THE DIAPHRAGM, EXCEPTING PHRENICECTOMY

Menegaux read a paper on the technic and Costantini on the physiologic effects of operations on the diaphragm, excepting phrenicectomy. Sauerbruch of Berlin, Harrington of the Mayo Clinic, Truesdale of Fall River, Mass., and Jentzer and Cheridjian of Geneva took part in the discussion.

Menegaux of Paris cited the following conditions as indications for operative intervention: 1. Congenital malformations (retroxiphoid and esophageal hiatus hernias). 2. Injuries with or without accompanying visceral herniation. Those of the left half do not heal spontaneously as well as those of the right half, which are favored by the presence of the liver and hence can heal without operation. If a visceral hernia exists, it should be operated on early. Foreign bodies are more frequently found than it is generally believed. 3. Lesions of the esophageal hiatus (stenosis, cardiospasm, hernias containing a portion of the stomach and one or more coils of small intestine). 4. Eventration (usually observed only on the left half). 5. Tumors (usually secondary). 6. Subphrenic abscess or hepatic cysts.

A preliminary phrenicotomy may be of help because of the relaxed condition of the diaphragm. Pneumothorax is dangerous and seldom indicated. The latter is true of plastic operations on the bony thorax. During the operation, one should avoid traction on the mediastinum and especially on the pericardium. Anesthesia under positive pressure will greatly diminish the shock of pneumothorax. In the after-care, large doses of morphine are indicated, not only for the pain but to decrease the demands of the body for oxygen. After a description of the technic of the different ways of approach to the diaphragm, the following conclusions as to the indications for each method were given:

1. To approach the left half, the combined thoraco-abdominal route, beginning with the abdominal, which alone may suffice.

2. To approach the esophageal hiatus and adjacent portion of the left half of the diaphragm: Abdominal approach with a bougie in the esophagus so as to avoid opening the lumen.

If the closing of the hernial opening is difficult, it is advisable to combine at once the thoracic and the abdominal routes of approach.

3. For the right half, one can employ either the thoracic subpleural transdiaphragmatic or the transpleurodiaphragmatic route. In cases of combined liver and diaphragm injuries, it may also be necessary to perform a laparotomy.

Costantini of Algiers maintained in his paper that the adbominal mode of approach to the diaphragm was much less apt to give rise to serious complications than the transthoracic route with its accompanying pneumothorax. Much has been accomplished in decreasing the ill effects of a pneumothorax since the introduction of anesthesia combined with positive pressure, and Costantini made a plea for its use in all operations on the diaphragm. Even under favorable conditions the technic is difficult and one cannot determine in advance which patients will present marked evidence of shock followed by asphyxia and death. As a rule, recurrence after operations for diaphragmatic hernia is rare. A preoperative diagnosis of strangulation of such a hernia is seldom made.

In the clinical study (preoperative) of nonstrangulated cases the condition of the respiratory and cardiovascular apparatus, of the endocrine glands and of the kidneys must be carefully evaluated. The radiologic examination should yield information as to the location and dimension of the hernial opening. The speaker agreed with Menegaux that preliminary measures such as phrenicectomy, pneumothorax or thoracoplasty were rarely indicated unless the operator did not have at his disposal an apparatus for establishing positive pressure.

The abdominal route is less dangerous, but one may have great difficulty at times in reaching the dome of the left half of the diaphragm. The thoracic route permits direct liberation of the hernial contents and better facilities for closing the opening in the diaphragm, but one is confronted with the danger incident to the pneumothorax, such as sudden displacement of the mediastinum. A simple intercostal incision on the anterolateral aspect of the thorax, usually at the level of the seventh rib, permits access to all parts of the left dome. The combined thoraco-abdominal route is the most convenient, but the question of pneumothorax must be considered. However, this route is not any more dangerous than the thoracic approach alone, and it has the advantage of permitting an easier liberation of the hernial contents when adhesions are present. The best incision for the thoraco-abdominal approach is a paramedian one (left) extending to the seventh interspace. The degree of positive pressure should be a little above the normal atmospheric pressure. It should be increased during the initial and final steps of the operation and decreased in the interval. Pleural drainage should be employed only if there were many adhesions and some bleeding. It should be by siphonage, with constant aspiration. Postoperatively, morphine must be given in relatively large doses. For closing the opening in the diaphragm nonabsorbable suture material is preferable. When the hernial opening is large and difficult to close, a phrenicotomy (either cervical or intrathoracic) will render the diaphragm flaccid and facilitate greatly the closure of the opening.

Sauerbruch of Berlin, who opened the discussion, greatly preferred the thoracic mode of approach to the diaphragm. In a large number of hernias (diaphragmatic) operated on by him, there were only five deaths.

Harrington of the Mayo Clinic prefers the abdominal route. He employs fascia lata as suture material, reinforced by linen thread. In hernias with large openings, a preliminary phrenicotomy renders closure a relatively easy procedure. In a total of 105 operations on the diaphragm there were ninety-seven herniotomies with seven deaths. There were two recurrences in the ninety successful cases. Following operation, the function of the diaphragm is not modified unless there has been wide destruction of the phrenic nerve or its branches.

Truesdale of Fall River reported thirteen herniotomies (all congenital) in children. The mortality was 7.5 per cent. He preferred nitrous oxide-ether as an anesthetic.

BERLIN

(From Our Regular Correspondent)

Oct. 14, 1935.

Health Certificates as a Requirement for Marriage

The federal government has just passed a "law to prevent hereditary taints and thereby safeguard the health of the German people." The government seeks to build up a special form of protection for the family by prohibiting the contraction of marriage in the event that the health of either contracting party is of such a nature as to constitute a medical contraindication. The law makes it compulsory for persons who contemplate marriage to report at the bureau of health having jurisdiction, to undergo a medical examination, on the basis of which, if favorable, a so-called *ehetauglichkeitszeugnis*, or certificate of fitness for marriage, will be issued. In the following cases a certificate will be refused: (1) if either of the contracting parties is affected with a disease that may prove contagious and that awakens the just fear that a marked disturbance of the health of the other party or of offspring may result; (2) if either of the contracting parties, after coming of age, has been placed by the courts under a legal guardian; (3) if either of the contracting parties, although not placed under a legal guardian, is affected with a mental disturbance that makes the proposed marriage appear undesirable from the standpoint of public security, and (4) if either of the contracting parties is affected with a hereditary disease within the purview of the law pertaining to the prevention of offspring with hereditary taints.

The sterilization law, to which reference is here made, mentions eight groups of diseases that come within the scope of this law. The list of reasons for prohibiting a contemplated marriage is thus raised to eleven. Worthy of note is the fourth provision, that a person, although sterilized, may not enter into a marriage union if his (or her) condition of health comes within the scope of the sterilization law. The legislator, whose duty it is to promote an increase of the population, will not permit a healthy marital partner to remain childless. The practicability of adding "mental disturbances," as in the third provision (not the mental diseases proper as listed in the sterilization law), to the reasons for prohibition of marriage may be doubtful. By "mental disturbances" is probably meant neuroses, depressions and the like, which in view of the summary examination by the health officer called on to issue the certificate, will present no slight difficulties in the way of a definite diagnosis.

If both of the contracting partners are foreigners, or if the prospective husband is a foreigner, the law has no application. On the other hand, a foreign woman who plans to marry a German citizen must subject herself to a medical examination. A marriage performed in a foreign country with the object of avoiding the operation of this law is null and void. The penal code provides that the underhanded contraction of a prohibited marriage through false statements, and even an attempt to contract such a marriage, is punishable with a prison sentence of from three months to five years.

The aims of this legislation are set forth in a recent pronouncement of Frick, the federal minister of the interior, to the effect that it will insure that only such marriages may be contracted in Germany as will guarantee a healthy offspring. Generations may come and go, but the German people shall live on forever.

The so-called Nuremberg law of Sept. 15, 1935, termed "Schutz des Blutes und der Ehre," also forms a part of the marriage control policies of the present German government.

The law states that the lawmakers "permeated with the knowledge that the purity of the German blood is a precondition for the continued existence of the German people, and filled with the inflexible determination to make the German nation secure for all future time," have ordered that marriages in which either contracting party is Jewish and the other party is a citizen of German or kindred blood shall be prohibited, and that marriages entered into in a foreign country with a view to circumvent this law shall be null and void. Extramarital congress between Jews and citizens of German or kindred blood is prohibited.

According to official statistics, the upward numerical trend of marriages has persisted. In 1934 the number of marriages per thousand of population was 11.2, which is higher than in previous years. It was only 7.8 in 1913 and 9.7 in 1933. The increase in marriages in 1934 was not so significant in the rural sections as in the cities. In the communes with more than 100,000 inhabitants the marriages were 12.6 per thousand of population; in communes with from 15,000 to 100,000 inhabitants the number was 11.5, and in the rural communes with less than 15,000 inhabitants only 10.2.

An insight into the marriage policies of the government may be obtained also through a scrutiny of the status of the government aid to young couples desiring to marry. In the first quarter of 1935 the law for the promotion of marriages began to show some favorable results. More loans could be remitted because of living births than there were new loans made, and yet the number of marriages did not decrease. There had been eight living births for about seven marriages promoted by government aid. During the first quarter of 1935 there were 34,650 marriage loans granted and 38,904 marriage loans remitted in part. In the second quarter of 1935, 29,662 marriage loans were granted and in 28,356 cases a certain portion was remitted by reason of living births. Between August 1933 and the end of June 1935, 440,826 marriage loans were made and 220,844 loans were remitted in part, in the German reich.

In this connection statistics on divorces, recently published by the federal bureau of statistics, for the year 1933, may be mentioned. In 1933 a total of 42,485 marriages were dissolved by the courts. In 66 per cent of the cases, violation of marital duties (in 1913, 46.8 per cent) constituted the grounds for divorce. Adultery was the charge in 35.2 per cent of the cases (in 1913, 55 per cent). It is apparent, therefore, that adultery as a cause for divorce has declined considerably since the prewar period. The number of divorces granted because of mental disease has greatly increased (1913, 373; 1933, 706). Of the marriages dissolved by divorce in 1933, ninety-three had been contracted within the twelvemonth, 1,035 more than a year but less than two years, 2,384 more than two years but less than three years, and 3,221 more than three years but less than four years. The most critical time appeared to be between four and five years of married life. During this period 3,533 marriages were dissolved. The number of marriages dissolved between the fifth and sixth years was almost as high as between the fourth and fifth; after that a rapid decline was observable. Nevertheless, more than 2,300 marriages contracted between 1908 and 1912 were dissolved in 1933, while about 2,100 marriages contracted previous to 1908 were dissolved. In connection with the child problem, it is interesting to note that nearly half of the marriages dissolved by divorce were childless.

The Health Record Book

For some time the plan of introducing a health record book that would contain data of regular health examinations and would accompany the bearer throughout life has been under discussion. A beginning has now been made with respect to the members of the "Hitler-Jugend," the large and comprehensive youth organization of the national-socialist party. The health record book was introduced some time ago as an experiment in a certain district, and the observations of the results were favorable. Now the innovation is to be made compulsory in all the families of the members of the Hitler-Jugend, in order to carry out the plan of securing information as to the health of all units of the German people. The medical supervision in schools for the training of leaders, in labor camps and the like, will be greatly lightened in this manner, since the medical observations will always be available. The health record book will have extraordinary importance in occupational guidance. Every two years a supplementary examination, the results of which will be likewise entered in the health record book, will be made.

VIENNA

(From Our Regular Correspondent)

Oct. 24, 1935.

Pollitzer's Hundredth Birthday Anniversary

Adam Pollitzer, the founder of scientific otology, who was known to the nineteenth century as the leading otologist of his day, would have been 100 years old, a few days ago, if he had lived. The anniversary of his birth was celebrated by all fortunate enough to come in contact with this unusual man. Pollitzer was a representative of an inconspicuous Jewish family in Hungary. He received his training in Vienna, where in 1859 he obtained the doctor's degree in medicine. He studied under Claude Bernard, Helmholtz and Toynbee of London, where he laid the foundations for his masterful researches on the anatomy, pathology and physiology of the auditory organ. He introduced many therapeutic methods for ear disorders, most of which are still in use. He was the main moving force in the creation in 1873 of the first ear clinic in the world, at Vienna, although it was of exceedingly modest dimensions, consisting of two rooms with twenty beds, together with a small laboratory. Nevertheless these small rooms soon became the Mekka of all the otologists of the world, for Pollitzer was an excellent teacher, a man of indefatigable industry and possessed of a very exceptional depth of knowledge, thereby inspiring his more intelligent pupils to undertake most valuable researches. His contributions to the knowledge of the anatomy of the ears, to the pathology of otitis media and of catarrh of the middle ear, and his operative technic of the labyrinth, were milestones in the development of otology. The Pollitzer air douche is still used everywhere; his wall charts illustrating the anatomy of the ear, and his illustrations of the ear drum are still unexcelled in beauty and precision. The vast majority of the otologists in Europe were and are his pupils, among whom are men of international reputation. The school and clinic that he founded are still flourishing.

Changes in the Medical Faculty

Prof. Dr. Alfred Fischel, the director of the Institute of Embryology at the University of Vienna, has been placed on the retired list. Born in 1868, he studied in Prague and Vienna, whereupon he devoted himself to experimental pathology and embryology. His textbook on embryology ("Lehrbuch der Entwicklungsgeschichte") is a standard work. The Vienna institute is indebted to him for its valuable and comprehensive collection of embryologic specimens. Fischel's chief field of research was the origin of monsters.

The Vienna Institute of Legal Medicine has been taken over by Prof. Dr. Fritz Reuter of Graz. He is 59 years of age. After pursuing his studies in Zurich and Vienna he became the head of the department of pathology at the University of Graz, and later he served in a similar capacity in the army. Thereupon his field of activity shifted to Vienna, where he became the assistant of Haberda. He has published numerous scientific works, two of which, "Forensic Gynecology" and his "Textbook on Legal Medicine," have received widespread recognition.

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Professor Dr. Carl Sternberg

Another of the most eminent representatives of the renowned Vienna school of physicians has received his final summons. Prof. Dr. Carl Sternberg, the pathologic anatomist, died suddenly, during a trip in a row boat, at the age of 64. He was a native of Vienna and secured all his training in this city. As a young physician he came under the influence of Professor Paltauf, whose position in the field of pathologic anatomy is well established. Sternberg soon became his best collaborator and made so quickly a name for himself that, although scarcely 30, he was appointed privatdozent and served as pathologist of the Vienna Policlinic. In 1906 he accepted a position as anatomic assistant at the large hospital in Brünn, where he remained until 1920. He came, however, every week to Vienna to deliver his lectures. During the war he was the chief pathologist and bacteriologist of the army, and it was owing to his skill and diligence that the wartime epidemics were prevented from spreading in Austria. On returning permanently to Vienna he became prominent as "prosektor" of three large hospitals and general secretary of the Vienna Medical Society. In spite of his manifold professional activities, he found time to write more than 150 scientific treatises. His researches included lymphogranuloma, the lymphatic apparatus and its disorders, the pathology of the intestinal tract (including tumors), and typhoid and cholera. His chief work is his textbook on general pathology and anatomy. He was one of the most active members of the Austrian Cancer Society. He supplied also valuable treatises on "The Bacteriology and Pathologic Anatomy of Paratyphoid" and on "Mixed Infections of the Intestinal Tract."

Tuberculous Arthritis

At a recent session of the Graz Medical Society, Dr. W. Berger and Dr. P. Ludwig reported the results of their research on polyarthritis, in which antituberculosis treatment brought striking improvement. They demonstrated two cases in which very severe joint changes, with complete stiffening of the limbs and helplessness, resulted from articular rheumatism, which had remained resistant to all forms of treatment. Finally, the employment of old tuberculin, autovaccines and natural sunlight restored to a great extent the use of the limbs and brought an increase of weight of about 44 pounds (20 Kg.). By using the Löwenstein method, tubercle bacilli could be demonstrated in the blood of both patients. Two years previously, Löwenstein in Vienna, in collaboration with Reitter, demonstrated tubercle bacilli in blood culture in 68 per cent of 209 cases of "acute articular rheumatism" and in 27 per cent of eighty cases of primary chronic polyarthritis. At the Graz clinic, out of twenty-four cases of chronic polyarthritis, which, according to clinical symptoms, appeared to be undoubtedly of tuberculous origin, tubercle bacilli were demonstrated in the circulation in fourteen. The correctness of the diagnosis was further strengthened by the success that followed the tuberculosis treatment (application of tuberculin, strengthened by autovaccines). Likewise in acute arthritis of the type of articular rheumatism examination of the blood gave positive results even in the cases in which treatment with salicylic acid was successful. Also cases of vegetative endocarditis and of endocarditis lenta peracta were studied. Coronini, Popper and Bodart secured in forty cases of recent vegetative endocarditis forty positive and no negative results; cultures of tubercle bacilli from fresh cadaver blood and heart tissues yielded, in endocarditis peracta, five positive and forty-seven negative results. The two speakers reported also having observed cases of tuberculous endocarditis in which the clinical observations coincided with the examinations of the blood cultures. It seems, therefore, that a considerable percentage of cases of acute and chronic articular rheumatism not only present clinical evidence of a tuberculous origin but also are associated with tuberculous bacillemia. On the other hand, one must not overlook the signs that point to a septic etiology, for in more than 10 per cent of the cases these alone were found in the blood and in the joints. Clinical observations on the two kinds of cases force one to adopt the view that a synergism exists in joint pathology between cocci and tubercle bacilli; furthermore, that there is a clinically nonfungous type of tuberculous polyarthritis; in addition, certain other noninfectious factors play a part: hormonic, constitutional, climatic and thermic factors, and possibly still others.

BUCHAREST

(From Our Regular Correspondent)

Oct. 23, 1935.

The Congress of the National Medical Association

The National Medical Association held its annual congress, September 26-28, in the spacious halls of the association. The attendance superseded all previous records. On account of the miserable economic conditions, physicians cannot afford to go abroad and therefore they satisfy themselves by spending some days in the capital.

Prof. Petre Tomescu, the newly elected president, reviewed the activities of the past year. He regards it as an achievement of the association that with its protestation it warded off revision of those physicians who occupy public offices. The government wanted to reduce the number of state clerks and officials at least 33 per cent for economic reasons. This would have been a disaster to hundreds of medical clerks. The successful intervention of the association against this measure means a great victory. Tomescu attaches great hope to the new medical academy, whose competence is beyond criticism. For the coming year, he set up the following program: 1. The public hygienic organization of the country and the interests of the medical profession demand that a campaign shall be undertaken to overcome the indifference with which the government handles public hygiene problems. 2. Vacant medical positions should be filled. At present hundreds of medical positions in villages are filled by medical students in spite of the great number of unemployed physicians, the reason being that the students offer themselves for much less pay. 3. The abolition of unqualified practitioners should be demanded. All foreign diplomas that have not been notified since the war ended should be revised. 4. A society should be founded to assist impoverished doctors, widows and orphans. One solution of this problem is to make representations to the government to allow a tax stamp of 1 leu (half a cent), to be affixed to every prescription.

The medical congress resolved to request the government to modify certain laws that were adopted lately by the senate. To the law forbidding certain qualified persons from carrying on their profession, the association will propose the addition of the following clause: Physicians, pharmacists and druggists shall be prohibited from practicing their profession except under the jurisdiction of the public health law. The law adopted by the senate does not contain any penalties for practicing quackery, while the public health law has several paragraphs for this purpose. Therefore the association finds it necessary to add these words: "Whoever conducts medical practice contrary to the rules of the public health law commits the crime of quackery and is liable to a penalty of six to twelve months imprisonment and a fine of from 5,000 to 50,000 lei.

The association will demand modification of the law on the falsification of public documents by the insertion of this clause: Any physician who knowingly issues a false medical certificate for use by magistrates or insurance companies commits the crime of issuing a false medical cerificate and not, as the law signifies, falsification of a public document, and is liable to imprisonment for from one to six months and a fine of from 1,000 to 2,000 lei.

The chapter on induced abortion needs the following modification: It is not regarded an artificial interruption of normal gestation (1) if the life or health is earnestly threatened, and if this danger cannot be averted by any other way, and if this danger can be eliminated by the interruption of gestation; (2) if one of the parents is insane or suffers from inheritable disease or anomaly and there is a well based suspicion as to the child inheriting this severe bodily or mental disturbance. Impunity is secured only for obstetricians, gynecologists or operative surgeons and only in case the abortion has been induced after a consultation with a specialist in the branch to which the disease pertains. A record has to be made of the discussions carried on at the consultation.

As to professional secrecy, the association suggests the insertion of the following paragraph: An attending physician may be absolved from keeping the secret of his patient in instances specified in the public health law; that is, in all cases in which revealing a secret is conducive to saving the lives or health of patients or communities.

Finally, the congress resolved to demand the insertion of a new paragraph on the baseless defamation of physicians. It is not unusual to blackmail doctors by claiming indemnities for badly treated cases. It frequently occurs that, when patients die after operations, the families of the deceased try to obtain compensation. In some cases doctors prefer to pay a certain amount than to be dragged to court. To prevent these abuses it is desirable that the law embody the following clause suggested by the medical association: Whoever publicly states defamatory things about a physician, referring either to his medical practice or to his private honor, which statements, if true, would involve personal or disciplinary prosecution or public contempt or would injure his professional reputation, commits the crime of "slander against a professional man" and is liable to a penalty of imprisonment ranging from six to twenty-four months and a fine of from 2,000 to 8,000 lei.

BUENOS AIRES

(From Our Regular Correspondent)

Sept. 24, 1935.

Transfusion of Preserved Blood

In a previous letter (THE JOURNAL, July 27, p. 296) the performance of transfusions of blood made in Bordeaux with blood sent from Buenos Aires by Drs. Palazzo and Tenconi was reported. The method and technic for transfusion of preserved blood reported by Drs. Palazzo and Tenconi (*Semana méd.* **1**:766 [March 8] 1934; *Rev. sud-am. de endocrinol.* **18**:40 [Jan. 15] 1935) have been used by Drs. Jeanneney and J. Vieroz of France (*Bull. et mém. Soc. nat. de chir.* **60**:1305 [Dec. 15] 1934). The blood, while being taken from the donor, is automatically mixed with sodium citrate and then it is passed through a silk filter before its reinjection. The blood is prepared by suspending 100 cc. of centrifugated erythrocytes in 235 cc. of a solution prepared with two parts of a 3.8 per cent sodium citrate solution and five parts of either a 10.3 per cent saccharose solution or a 5.4 per cent dextrose solution. Then it is kept in the icebox between 1 and 3 C. The centrifugated plasma is kept by itself. Cultures are made to exclude the presence of bacteria, and the blood groups are determined. Blood thus preserved is ready for transfusion at any time; its use avoids the need of resorting to donors in emergencies, the production of shock is rare, the technic is simple, it is inexpensive and the injections can be made at will with the erythrocytes of the plasma or with mixtures of the two. Drs. Palazzo and Tenconi have performed about 395 transfusions during the years 1933-1934. The average time of preservation of the cells used was 7.6 days. In some cases the cells used had been kept for twenty-seven days and the same satisfactory results were obtained.

Economic Difficulties of Hospital Physicians

More than 2,000 physicians give free medical care to the public in the hospitals of Buenos Aires, to which they go daily. As there are no restrictions as to the selection of patients, grave conditions, both for hospitals and for physicians, have originated. The number of patients attending free hospital clinics and dispensaries continually increases, but the hospital incomes do not increase and the means are insufficient to cope with the demands of the public. Some persons, either because they bring letters of recommendation or because they give small donations to the hospitals, are given preferential attention over the poor. The physicians' private practice decreases while their free work in the hospitals increases. Many physicians cannot now make a living, and for this reason the group of hospital physicians agreed to ask a small salary from the hospitals. The Partido Socialista presented a project in which a yearly allowance of 5,000,000 Argentine pesos (about $1,400,000) can be obtained from the government. The attitude assumed by the physicians has gained publicity through the press and by lectures. The opinions of the physicians are conflicting and, while some believe that it is fair to obtain remuneration for their work, others prefer to have a complete readjustment in the present conditions of the profession, without accepting salaries, a fact that they believe may make the members of the profession subordinate employees in the category of proletarians or place them under the direction of political authorities.

Methylene Blue in Cyanide Poisoning

In THE JOURNAL, August 31, is an editorial which reviews Wendel's article dealing with the action of methylene blue in cyanide poisoning, which the author proved experimentally to be due to the capacity of the stain to form methemoglobin in the blood. The same conclusions were reported in 1933 by Hug (*Rev. Soc. argent. de biol.* **9**:461 [Oct.] 1933; *Compt. rend. Soc. de biol.* **114**:947, 1933), who made methemoglobin determinations by means of the Van Slyke gasometric method, after injection of methylene blue. He found that methemoglobin is formed, although in quantities no larger than 17 per cent of the total quantity of hemoglobin in the blood. The weak antidotal action of methylene blue, as compared with that of sodium nitrite, is explained by the slight capacity of the former to form methemoglobin in living animals.

Obituaries

Drs. Facundo Larguía, formerly director of the Patronato de la Infancia (a child welfare center) and Ramón Aranguren, formerly director of the Instituto Pasteur antirabico (antirabic center) of the municipality of Buenos Aires, have died.

Marriages

LESTER L. ANDERSON to Miss Estelle Taylor, both of Stoneville, N. C., in Chesterfield, S. C., November 11.

CHARLES K. FETTERHOFF, Harrisburg, Pa., to Miss Mary Elizabeth Shue of Mount Union, August 14.

CHARLES H. LACLAIR JR., Uniontown, Pa., to Miss Loretta K. Mercer of Philadelphia, September 21.

ARTHUR P. KEEGAN, Philadelphia, to Miss Mary J. Noonan of South Scranton, Pa., September 28.

FRANK HURRON MURRAY, Chester, Pa., to Miss Julia Ralston Young of Swarthmore, September 4.

GEORGE S. MOORE, Hartford City, Ind., to Miss Mary Terhune in Middletown, September 5.

ALFRED CHARLES MOORE to Miss Margaret Wells, both of Baltimore, September 21.

OTTO A. MILLER, Ashland, Pa., to Miss Helen M. Fisher of Reading, September 26.

Deaths

Prof. Lafayette Benedict Mendel, Ph.D., LL.D., member of the Council on Pharmacy and Chemistry of the American Medical Association since 1917 and of the Committee on Foods since its inception, an Associate Fellow of the American Medical Association, died at his home in New Haven, Conn., December 9, after a long illness. Professor Mendel was born in Delhi, N. Y., in 1872, graduated from Yale in 1891, and received his Ph.D. in 1893. He continued his studies at Breslau and Freiburg in 1895 and 1896. He became assistant in physiologic chemistry in Yale University in 1892 and professor in 1903. In 1921 he was made Sterling professor. He was a pioneer in the study of nutrition in this country, contributing extensively to the literature in his field and exerting a tremendous influence on scores of men and women who worked and were trained under him and then advanced to distinction in other institutions. Much of his work with proteins, vitamins and other nutritional factors was carried out in association with Thomas B. Osborne, distinguished in the field of chemistry of vegetable proteins. Dr. Mendel was appointed to many important lectureships in various universities and medical schools. He received the honorary degree of doctor of science from the University of Michigan in 1913, from Rutgers in 1930 and honorary LL.D. from Western Reserve University in 1932. He was associate editor of many leading publications in the biochemical field both here and abroad and a member of all the leading organizations in his specialty. For many years he was a prolific contributor on his special topic to the editorial columns of THE JOURNAL. Dr. Mendel was awarded in 1934 the Conné medal of the New York Chemists' Club in recognition of his outstanding chemical contribution to medicine. He was also gold medalist of the American Institute of Chemists in 1927. As an educator he was a member of the governing board of the Sheffield Scientific School and of the Graduate School of Yale University, of the Russell Sage Institute of Pathology, of the advisory board of the J. S. Guggenheim Memorial Foundation, and of the Commission on Medical Education. He was author of "Nutrition—The Chemistry of Life; Changes in the Food Supply and Their Relation to Nutrition," and of innumerable essays and monographs. During the last two years he was confined to bed and unable to work because of a severe disabling illness. His wife, Alice Friend Mendel, died within the past month.

LAFAYETTE BENEDICT MENDEL
1872-1935

Professor Mendel was widely known for the breadth of his knowledge, his grasp of complicated problems in the field of medicine, his clear vision and exceptional common sense in their solution. Educators, industrial representatives and public officials in large numbers constantly sought his advice and counsel. By the warmth of his friendship and his love for humanity he endeared himself to all who knew him.

Herman Morris Adler ✠ Berkeley, Calif.; Columbia University College of Physicians and Surgeons, New York, 1901; professor of psychiatry, University of California Medical School; assistant professor of psychiatry, Harvard University Medical School from 1912 to 1917, as well as chief-of-staff at the Boston Psychopathic Hospital; in 1916 made a survey of Cook County, Ill., on facilities for the detection and care of mental diseases, under the auspices of the Rockefeller Foundation and the National Committee for Mental Hygiene; in 1917 was appointed state criminologist and director of the Juvenile Psychopathic Institute, Chicago; during the war served as a major in the medical corps of the U. S. Army, on special duty in disciplinary psychiatry at military prisons; professor of criminology and head of the department of social hygiene, medical jurisprudence and criminology, University of Illinois College of Medicine, Chicago, 1919-1928; adviser to the California Department of Institutions; since 1926 director of the Behavior Research Fund; consultant to the National Committee on Law Observance and Enforcement; member of the Illinois State Medical Society, the Massachusetts Medical Society, the American Neurological Association, the American Psychiatric Association, the New England Society of Psychiatry, the Association for Research in Nervous and Mental Disease, the American Psychopathological Association, the Central Neuropsychiatric Association, the American Orthopsychiatric Association and the American Association of Pathologists and Bacteriologists; author of the section on Medical Science and Criminal Justice in the Criminal Justice Survey of the Cleveland Foundation in 1921; aged 59; died, December 7, in Boston, of pneumonia following an operation.

Samuel Gordon Dabney ✠ Louisville, Ky.; University of Virginia Department of Medicine, Charlottesville, 1882; Hospital College of Medicine, Louisville, 1883; professor emeritus of otology, rhinology and laryngology, and for forty-five years connected with the University of Louisville School of Medicine; member of the American Academy of Ophthalmology and Oto-Laryngology; fellow of the American College of Surgeons; on the staffs of the Louisville City Hospital and the Norton Memorial Infirmary; aged 75; died, October 15, of chronic nephritis.

Ralph Vincent Robinson ✠ Pittsburgh; University of Pittsburgh School of Medicine, 1911; member of the American Roentgen Ray Society and the Radiological Society of North America; instructor in roentgenology at his alma mater; served during the World War; on the staffs of the Presbyterian and Children's hospitals and the Falk Clinic; aged 51; died, October 5, of cerebral hemorrhage.

James Edwin Rush ✠ Pittsburgh; University of Pittsburgh School of Medicine, 1920; formerly head of the department and professor of hygiene and public health, University of Kentucky, Lexington; at one time field director of the American Society for the Control of Cancer; on the staff of the Tuberculosis League Hospital; aged 48; died, October 14, of heart disease.

George Merrill Gelser, Rochester, N. Y.; Cornell University Medical College, New York, 1907; member of the Medical Society of the State of New York; trustee, for many years, and past president of the Rochester Academy of Medicine; on the staff of the Rochester General Hospital; aged 53; died, October 21, of coronary occlusion and arteriosclerosis.

Robert Haller Newman ✠ Knoxville, Tenn.; University of Louisville (Ky.) Medical Department, 1905; past president of the Knox County Medical Society; served during the World War; on the staff of the Knoxville General Hospital; aged 55; died, October 13, in the Fort Sanders Hospital, of chronic myocarditis and nephritis.

James Allen Marshall ✠ Pontiac, Ill.; Detroit College of Medicine, 1886; past president of the Livingston County Medical Society; for thirty-five years attending surgeon at the Illinois State Reformatory; aged 74; died, November 15, in the Passavant Memorial Hospital, Chicago, of carcinoma of the transverse colon.

Henry De Witt Shankle ✠ Washington C. H., Ohio; College of Physicians and Surgeons, Baltimore, 1889; member of the Oklahoma State Medical Association; served during the World War; formerly connected with the Veterans Administration Facility; aged 68; died, September 26.

Everette Odell Arnold, Corpus Christi, Texas; Baltimore Medical College, 1909; veteran of the Spanish-American and World wars; formerly in the U. S. Public Health Service and medical examiner of the U. S. Veterans' Bureau; aged 61; died recently, in a local hospital, of tetanus.

Samuel Milan Kitchen, Nashville, Tenn.; Vanderbilt University School of Medicine, Nashville, 1935; intern at the Davidson County Tuberculosis Hospital; aged 24; died, September 1, in the Vanderbilt University Hospital, of pneumonia, metastatic septicemia and osteomyelitis.

LeRoy Delmar Cratty, Wilkinsburg, Pa.; University of Pittsburgh School of Medicine, 1913; member of the Medical Society of the State of Pennsylvania; for many years on the staff of the Western Pennsylvania Hospital, Pittsburgh; aged 45; died, October 26.

Edgar Rand, Huntsville, Ala.; Medical College of Alabama, Mobile, 1879; member of the Medical Association of the State of Alabama; past president and secretary of the Madison County Medical Society; aged 79; died, September 8.

Joseph Perry Standley, St. Joseph, Mo.; Kentucky School of Medicine, Louisville, 1889; member of the Missouri State Medical Association; aged 66; died, November 8, in the Missouri Methodist Hospital, of a skull fracture received in an automobile accident.

Wallace Eugene Miller, Mount Hermon, La.; Tulane University of Louisiana Medical Department, New Orleans, 1910; aged 50; died, October 3, in the Elizabeth Sullivan Memorial Hospital, Bogalusa, of diabetes mellitus and carbuncle of the neck.

Clarence Whitfield Buckmaster ✠ Yonkers, N. Y.; College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1894; city health officer; formerly member of the school board; aged 63; died, October 7.

William Brink Rosecrans, Brooklyn; Albany (N. Y.) Medical College, 1901; member of the Medical Society of the State of New York; on the staff of the Wyckoff Heights Hospital; aged 61; died, September 25, of pulmonary embolism.

Ferdinand Comfort Sommer, Bloomsburg, Pa.; Jefferson Medical College of Philadelphia, 1929; member of the Medical Society of the State of Pennsylvania; aged 30; died, October 15, at the Jefferson Hospital, Philadelphia, of meningitis.

Zina A. Spendley, Chenango Forks, N. Y.; Eclectic Medical College of Pennsylvania, Philadelphia, 1869; member of the Medical Society of the State of New York; aged 92; died, October 11, of cerebral embolism and arteriosclerosis.

Katharine Stemen Hughes, Kansas City, Kan.; College of Physicians and Surgeons, Medical Department Kansas City University, 1896; member of the Kansas Medical Society; aged 73; died, October 23, of sarcoma of the mesentery.

Frederick Henry Langhorst ✠ Elgin, Ill.; Rush Medical College, Chicago, 1900; fellow of the American College of Surgeons; aged 64; on the staffs of St. Joseph's Hospital and Sherman Hospital, where he died, September 27.

Harold Victor Mangun ✠ Ackley, Iowa; State University of Iowa College of Medicine, Iowa City, 1925; past president of the Hardin County Medical Society; aged 35; died, September 27, in Iowa Falls, of lobar pneumonia.

Walter Geddes Hope, Albuquerque, N. M.; Jefferson Medical College of Philadelphia, 1886; an Affiliate Fellow of the American Medical Association; aged 75; died, September 22, in Los Angeles, of hypostatic pneumonia.

Eugene Holdeman, Elkhart, Ind.; Medical College of Indiana, Indianapolis, 1897; member of the Indiana State Medical Association; for many years county coroner; aged 61; died, October 14, of bronchopneumonia.

Charles Moore Burrows, Albion, N. Y.; College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1889; aged 69; died, October 2, of arteriosclerosis and gangrene of the left foot.

Charles Claud Greenfield, Argenta, Ill.; St. Louis College of Physicians and Surgeons, 1904; member of the Illinois State Medical Society; aged 56; died, September 13, in Decatur, of strangulation of the bowel.

Leo DeLance Parry ✠ Easton, Pa.; Maryland Medical College, Baltimore, 1912; on the staff of the Warren Hospital, Phillipsburg, N. J., and the Easton Hospital; aged 45; died, October 13, of carcinoma.

Robert Lee Nance, Bedford, Va.; University of Louisville (Ky.) School of Medicine, 1933; aged 29; intern at the Boston City Hospital, where he died, October 13, of acute tonsillitis and pulmonary embolus.

Allen Benson Clark, Joplin, Mo.; Columbus Medical College, 1890; member of the Missouri State Medical Association; city health officer; formerly member of the school board; aged 70; died, September 15.

Maurice Buchsbaum, Gary, Ind.; Rush Medical College, Chicago, 1905; member of the Indiana State Medical Association; aged 68; died, October 24, in the Mount Sinai Hospital, Chicago, of carcinoma.

Charles Gustaf Nordin ✠ St. Paul; University of Minnesota Medical School, Minneapolis, 1910; aged 50; died, October 9, in the Northern Pacific Beneficial Association Hospital, of carcinoma of the liver.

Carey E. Wamsley ✠ Newport, Ky.; Miami Medical College, Cincinnati, 1906; on the staff of the Speers Memorial Hospital, Dayton; aged 55; died, September 24, in the Christ Hospital, Cincinnati.

John Shepard May, Boston; Jefferson Medical College of Philadelphia, 1897; member of the Massachusetts Medical Society; aged 64; died, October 10, in the City Hospital, of coronary sclerosis.

John Parker Stoddard, Muskegon, Mich.; Bellevue Hospital Medical College, New York, 1867; member of the Michigan State Medical Society; aged 100; died, October 11, of cerebral hemorrhage.

William M. Hatfield, Mulhall, Okla.; State University of Iowa College of Medicine, Iowa City, 1886; for many years president of the Mulhall district school board; aged 77; died, October 16.

Robert S. Freedman, New York; College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1895; aged 76; died, November 13, of uremia and acute nephritis.

Irvine R. Bush, Ardmore, Pa.; Jefferson Medical College of Philadelphia, 1883; member of the Medical Society of the State of Pennsylvania; aged 76; died, October 15, of heart disease.

Roy Mason Sweeney ✠ Sapulpa, Okla.; St. Louis College of Physicians and Surgeons, 1907; past president of the Creek County Medical Society; aged 52; died, October 18, of carcinoma.

Nat K. King, Laredo, Texas; Louisville (Ky.) Medical College, 1893; medical officer in charge of the U. S. Public Health Service; served during the World War; aged 60; died, October 14.

Adrian Ramon Bustillo, Tampa, Fla.; Universidad de la Habana Facultad de Medicina y Farmacia, Cuba, 1922; on the staff of the Centro Asturiano Hospital; aged 36; died, October 4.

Albert William Swearingen, Los Angeles; College of Physicians and Surgeons, Keokuk, Iowa, 1885; Jefferson Medical College of Philadelphia, 1888; aged 75; died, September 27.

Andrew Henderson, Powell River, B. C., Canada; McGill University Faculty of Medicine, Montreal, Que., Canada, 1880; aged 82; died, September 19, in St. Paul's Hospital, Vancouver.

John Ralph Sickler, Frankfort, Ind.; University of Pennsylvania Department of Medicine, Philadelphia, 1902; aged 58; died, October 14, of cerebral hemorrhage and arteriosclerosis.

Hiram Zebulon Frisbie, Elkland, Pa.; Jefferson Medical College of Philadelphia, 1894; member of the Medical Society of the State of Pennsylvania; aged 68; died, October 11.

James Logan Shiland, Santa Barbara, Calif.; College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1882; aged 78; died, September 15.

John Blake White ✠ New York; College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1874; aged 85; died, November 4, of heart disease.

Charles E. Stephenson, Columbia, S. C.; Meharry Medical College, Nashville, Tenn., 1903; aged 60; on the staff of the Good Samaritan Hospital, where he died, October 6.

George Tupper Swandale, Kenosha, Wis.; Bellevue Hospital Medical College, New York, 1878; aged 80; died, October 9, in the Kenosha Hospital, of intestinal obstruction.

William Ross Martin, Brooklyn; Omaha Medical College, 1891; member of the Medical Society of the State of New York; aged 69; died, October 13, of heart disease.

William H. Newlin, New London, Ind.; Eclectic Medical Institute, Cincinnati, 1890; aged 70; died, October 27, of heart disease, arteriosclerosis and prostatic hypertrophy.

George Cutler Upham, Biddeford, Maine; Bellevue Hospital Medical College, New York, 1882; member of the Maine Medical Association; aged 78; died, October 13.

Eugene Henry Bryan, Penryn, Calif.; Hospital College of Medicine, Louisville, Ky., 1894; member of the California Medical Association; aged 67; died, October 8.

William H. Zorger, Champaign, Ill.; College of Physicians and Surgeons, Keokuk, Iowa, 1886; member of the Illinois State Medical Society; aged 75; died, September 22.

James Dowlen Jones, Emerson, Iowa; Barnes Medical College, St. Louis, 1896; aged 68; died, September 19, in Kellerton, of bronchopneumonia and leukemia.

Milton Edward Beitenman ✠ Cascade, Iowa; Creighton University School of Medicine, Omaha, 1924; aged 39; was killed, October 17, in an automobile accident.

Henry Roscoe Lawrence, Atlantic City, N. J.; Jefferson Medical College of Philadelphia, 1881; also a druggist; aged 78; died, October 15, of coronary disease.

Oscar Eugene Wright, Fairview, Ky.; University of Tennessee Medical Department, Nashville, 1896; aged 63; died, October 13, of carbolic acid poisoning.

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Emmett E. Irwin, Russellville, Ark.; Georgia College of Eclectic Medicine and Surgery, Atlanta, 1908; aged 48; died suddenly, September 29, in Fort Gaines, Ga.

May Tower L. Bigelow ✠ Denver; University of Colorado School of Medicine, Denver, 1915; formerly member of the state legislature; aged 69; died, October 27.

Peter Francis Brosius ✠ Hazelton, Pa.; University of Pennsylvania Department of Medicine, Philadelphia, 1900; aged 60; died, November 2, of heart disease.

Charles Allen Snyder, Dubuque, Iowa; Michigan College of Medicine, Detroit, 1882; aged 81; died, October 14, in the Finley Hospital, of cerebral sclerosis.

Horace Sheridan Moran, Wakefield, Mass.; Harvard University Medical School, Boston, 1893; aged 68; died suddenly, October 18, of cardiovascular disease.

Franklin F. Mendenhall, Fishers, Ind.; Medical College of Indiana, Indianapolis, 1898; aged 79; died, October 24, of cerebral hemorrhage and arteriosclerosis.

Charles Francis Payne, Dayton, Texas; Barnes Medical College, St. Louis, 1908; served during the World War; aged 59; died, October 11, of pneumonia.

Otis Austin Sweet, Eminence, Ind.; Medical College of Indiana, Indianapolis, 1903; formerly county coroner; aged 57; died, October 24, of lobar pneumonia.

Henry Tyus Cox, Groesbeck, Texas; Baylor University College of Medicine, Dallas, 1922; aged 38; died recently, in a hospital at Houston, of nephritis.

William Kydd Ross, Toronto, Ont., Canada; McGill University Faculty of Medicine, Montreal, Que., 1883; L.R.C.P., Edinburgh, 1883; died, October 27.

Edward G. Abernethy, Algoma, Miss. (licensed in Mississippi in 1903); member of the Mississippi State Medical Association; aged 60; died in October.

Joshua Giddings Lewis, Lakewood, Ohio; Cleveland Medical College, 1866; aged 90; died, October 15, of cerebral hemorrhage and arteriosclerosis.

William A. Wenz, Indianapolis; Medical College of Indiana, Indianapolis, 1894; aged 63; died, October 9, of acute myocarditis and bronchopneumonia.

Andrew Mills Eagon, Staten Island, N. Y.; Bellevue Hospital Medical College, New York, 1890; aged 74; died, October 17, of chronic nephritis.

Joseph Markow Polisar ✠ Brooklyn; Long Island College Hospital, Brooklyn, 1912; on the staff of the Beth El Hospital; aged 51; died, October 14.

J. Taylor Grant Minnes, Niagara Falls, Ont.; Queen's University Faculty of Medicine, Kingston, Ont., Canada, 1929; aged 34; died, October 16.

George Alexander Durnin ✠ Bottineau, N. D.; University of Toronto Faculty of Medicine, Toronto, Ont., Canada, 1904; aged 59; died, October 25.

Leonidas H. York, Louisa, Ky.; Eclectic Medical Institute, Cincinnati, 1882; aged 84; died, September 19, of heart disease and mitral regurgitation.

George Lipscomb Izard, Mobile, Ala.; Tulane University of Louisiana Medical Department, New Orleans, 1888; aged 69; died, October 6, of colitis.

Herbert Elwell Woodbury, Indianapolis; Harvard University Medical School, Boston, 1899; aged 66; died, October 29, of coronary occlusion.

Jay Atwood Whitaker, San Francisco; George Washington University School of Medicine, Washington, D. C., 1912; aged 49; died, September 22.

George Martin, Baldwin, Wis.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1874; aged 82; died, September 27.

Thomas H. Shelton, Okmulgee, Okla.; St. Louis College of Physicians and Surgeons, 1905; aged 64; died, September 10, of chronic myocarditis.

Frank Givens, Rutledge, Mo.; College of Physicians and Surgeons, Keokuk, Iowa, 1877; aged 81; died, September 28, of chronic myocarditis.

Edward Clarence Lynch ✠ Montebello, Calif.; John A. Creighton Medical College, Omaha, 1906; aged 51; died suddenly, September 18.

Edwin Alden Leavitt, Worcester, Mass.; Tufts College Medical School, Boston, 1896; aged 70; died, October 17, of cerebral hemorrhage.

Christopher Lorenzo Oatman, Collinsville, Ill.; Barnes Medical College, St. Louis, 1899; aged 58; died, October 4, of chronic myocarditis.

Spencer W. Smith, Leesville, Ind.; University of Louisville (Ky.) Medical Department, 1882; aged 79; died, October 12, of myocarditis.

Amos E. Parker, Baltimore; University of Maryland School of Medicine, Baltimore, 1872; aged 86; died, September 19, of bronchopneumonia.

Henry Clay Littlejohn, Los Angeles; Kentucky School of Medicine, Louisville, 1881; aged 84; died, September 10, of cerebral embolism.

James Henry Souther, Threeforks, Ky.; Vanderbilt University School of Medicine, Nashville, Tenn., 1878; aged 84; died, October 3.

Elvin W. Jaquish, ✠ Punxsutawney, Pa.; Medico-Chirurgical College of Philadelphia, 1913; aged 49; died, October 8, of hypertension.

Daniel MacNeil, Glace Bay, N. S., Canada; Dalhousie University Faculty of Medicine, Halifax, 1913; aged 51; died, September 10.

Samuel H. Harris, Nashville, Tenn.; Georgia College of Eclectic Medicine and Surgery, Atlanta, 1886; aged 72; died, September 23.

Benjamin Franklin Hand ✠ Waynesboro, Miss.; Memphis (Tenn.) Hospital Medical College, 1907; aged 53; died, September 25.

Charles Edgar Benson, Kingsville, Md.; Maryland Medical College, Baltimore, 1904; aged 55; died, October 30, of phlebitis of the left leg.

Emma Ernsberger, Cairo, Ohio; Laura Memorial Woman's Medical College, Cincinnati, 1897; aged 73; died, October 11, of carcinoma.

David M. Gibson, St. Louis; Homeopathic Medical College of Missouri, St. Louis, 1890; aged 68; died, September 24, of heart disease.

Granville Gordon Little, Walkerville, Ont., Canada; University of Toronto Faculty of Medicine, 1905; aged 52; died, October 25.

James Oliver Moore, Adams, Ky.; University Medical College of Kansas City, Mo., 1901; aged 61; died, October 6, of leukemia.

William John McGeary ✠ Allison Park, Pa.; Bellevue Hospital Medical College, New York, 1893; aged 68; died, October 2.

Hugh B. Sanders, Louisville, Ky.; University of Louisville Medical Department, 1884; aged 76; died, October 8, of coronary occlusion.

Ira A. Marshall, Ironton, Mo.; Beaumont Hospital Medical College, St. Louis, 1889; aged 72; died, September 19, of nephritis.

Winnifred Green, Louisville, Ky.; Kentucky School of Medicine, Louisville, 1903; aged 66; died, October 4, of coronary occlusion.

Elisha L. Reeves, Decatur, Ill.; Eclectic Medical Institute, Cincinnati, 1890; aged 69; died, September 30, of angina pectoris.

John MacDonnell, Boston; College of Physicians and Surgeons, Boston, 1894; died, October 11, of carcinomatosis and uremia.

Sophia Penfield, Danbury, Conn.; New York Medical College and Hospital for Women, 1869; aged 91; died, September 26.

Charles Marion Rains, Bohannon, Va.; College of Physicians and Surgeons, Baltimore, 1877; aged 77; died, October 28.

Linnaeus Marshall Drown, Denver; Toledo Medical College, 1900; aged 61; died suddenly, September 14, of myocarditis.

Walter Henry Parker, Brewster, Mass.; Baltimore Medical College, 1896; aged 63; died, October 12, of coronary sclerosis.

Homer E. Jamison, Millburn, Ill.; College of Physicians and Surgeons of Chicago, 1894; aged 77; died, November 9.

William Henry Robinson ✠ Boston; Harvard University Medical School, Boston, 1893; aged 67; died, September 28.

Charles Albert Baldwin, West Los Angeles, Calif.; Cleveland Medical College, 1874; aged 81; died, September 20.

Wyatt C. Caraway, Forest, Miss.; Louisville (Ky.) Medical College, 1883; aged 78; died, October 16.

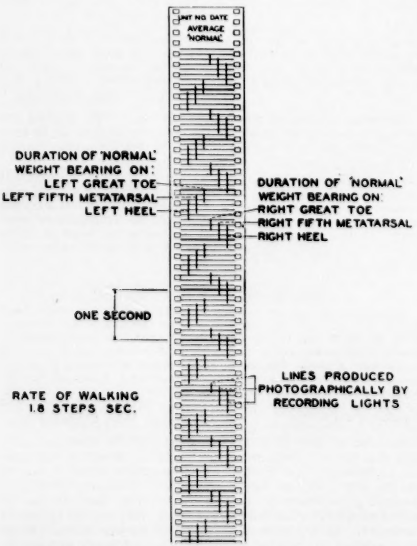
Correspondence

OBSERVATION VERSUS MEASUREMENT IN FIRE WALKING

To the Editor:—With much interest I have read reports of fire walking by Kuda Bux. This includes the item in the London letter (THE JOURNAL, October 19, p. 1282).

Again herein the statement is made "his feet making contact with the burning embers for some five seconds each time." I am enclosing herewith illustrations which support the belief that this statement may have been on the basis of opinion without relation to any accurate method of measurement.

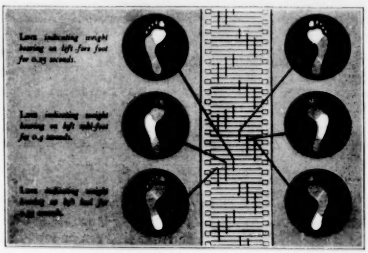
For a number of years I have been recording human gait. I have nearly 2,000 records at the present time. Approximately 1,000 of these are of normal individuals, accurately timed in seconds and tenths of seconds carried out to the third decimal. Each person, uninstructed as to the rate, walked a distance of 50 feet at the average rate of 1.8 steps per second. The weight-bearing time from the contact of the heel with the floor until the great toe left the floor was 0.65 second; for only 0.05 second was the entire plantar surface of the shoe in contact with the floor. These figures reveal the function of the foot through the shoe under normal conditions. Work now in progress with a different type of contact for recording strongly suggests that at this rate of walking there may be no interval of time at which the entire plantar surface of the foot is bearing weight. It is well to hold in mind that all of the foregoing applies to normal individuals walking under normal conditions.



"Normal" gait record drawn from average of fifty records.

This is important in relation to the statements of the prevailing conditions under which Kuda Bux walked on fire. It is reasonable to believe that under such influences the heel and longitudinal arch were elevated, the feet assuming the position of a toe-dancer or as when one is sprinting. It is not necessarily remarkable, therefore, that the court plaster in the arch of the foot failed to show evidence of having been scorched. On a basis of all facts mentioned herein, it seems reasonably possible that the position and time interval in which this particular individual brought his feet in contact with the hot embers was not such as to produce evidence of blisters.

It should be remembered also that Kuda Bux was highly trained in this particular feat. His reaction was correspondingly suited to prevailing conditions, having been conditionally reflexed by repeated experiences since he was 14 years of age. The fact that two other individuals wholly inexperienced in the



Duration of weight bearing on forefoot, midfoot and heel.

practice failed to meet the task is not necessarily proof that the result of his experience was entirely the result of faith.

That one may not be able to account for the influence of faith in this Kuda Bux demonstration is not of itself justification for denying the possibility. It is evident, however, that attention should be called to the time relationship of the contact of the foot with the burning embers of stated temperature. Until more accurate figures are available than those which have been quoted in THE JOURNAL and elsewhere, it seems pertinent to retain an open mind.

R. PLATO SCHWARTZ, M.D., Rochester, N. Y.

FACTS FROM A GOVERNMENT TRANSIENT CLINIC

To the Editor:—This communication is being written after two years' work in a federal transient bureau of an industrial center on the Great Lakes. Most of the families come from the West and the South.

I presumed when I started my work that most of the transient families and single girls would be suffering from a neurosis due to economic insecurity. This is not true in the family group. A normal family life minimizes other stress and strain. The single girls, however, show instability, in most cases a neurosis. They come from broken homes in most cases and fail to adjust in any environment. They live alone in furnished rooms and complain of being lonely, but when put in groups or in normal homes they become a source of friction.

Families and individuals from the South show an inadequate knowledge of what to buy in the line of foods. I do not mean any technical knowledge of vitamins or minerals but the common information we all have concerning vegetables, fruits and milk. Two persons developed a neuritis as the result of vitamin B deficiency. They bought corn meal, navy beans and salt pork almost exclusively, although the grocery order was ample to include a normal diet. One mother objected to suggestions, stating that she could not afford anything else. When told that kale and boiling beef would be cheaper and go as far as her selection of food, she confessed knowing nothing about kale, turnips and many of our common foods.

An attempt is made to vaccinate all nonvaccinated persons and protect all children from diphtheria and whooping cough. Most persons coming from the Southern states are not vac-

cinated and protest by saying ridiculous things as "You're not going to cup my arm off," showing the lack of general education in many sections.

The children as a whole are not undernourished. Out of thirty-two, twenty were underweight according to the Baldwin-Wood charts and twelve normal or overweight. Many of the "normal" children showed poor posture according to the standard that a plumb line drawn from the external auditory meatus should fall through the middle of the shoulder and hip joint. Six of the twenty underweight children attained normal weight when given a quart of milk daily and a cereal high in mineral and vitamin B.

In starting the work I was convinced that living quarters played a great part in keeping a child in good physical condition. This may be true of the adolescent, but I found no correlation between crowded, furnished rooms and poorly nourished children, and comfortable homes and healthy children.

Points brought out by the work are that:

1. Persons in family groups as a whole are stable emotionally. The single girls as a group show instability.

2. Persons from the South select a deficient diet, often developing a deficiency disease.

3. Many persons from the Southern and Western states know nothing of immunization. A careful watch should be made to immunize persons as they migrate into large cities.

4. Small children do not seem to react to poor living conditions. Their only requisite is food sufficient in quality and quantity.

MARY FETZER MAZZA, M.D., Cleveland.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted on request.

WINTER ITCH

To the Editor:—A woman, aged 51, complains of itching of the chest, arms and face, coming on only in the winter. This has appeared for five or six winters, perhaps more. During the summer months she is free from the pruritus. With the onset of cold weather, this itching appears, usually toward evening, lasting throughout the night. The itching is intense. There are no lesions save excoriations from scratching or rubbing. The patient has artificial dentures; cholecystectomy and appendectomy were performed four and one-half years ago; she was treated for residual gallstones by several physicians, but recently I have been able to avert and ameliorate attacks of pain by use of coronary dilator drugs; antipruritic drugs and lotions are without effect; change of bedclothes, linens and covers are of no avail; ovarian therapy has not helped. The patient is unable to obtain a restful night during the winter. Please advise as to diagnosis and suggested treatment. Blood chemistry and the icteric index are within normal limits. Kindly omit name in publication.

M.D., Wisconsin.

ANSWER.—How often does the patient bathe? How much soap does she use? The simplest explanation of the winter itch is that her skin is too dry from excessive use of soap, lack of perspiration, dry cold air outdoors and dry warm air indoors. She should cease the use of soap except on the face, hands and feet and in the folds of the body. She should use rose water ointment, preferably with 10 per cent boric acid, after each bath before the skin is wholly dry. Baths should not be hot, rather lukewarm, followed if possible by a cool douche.

LEAD POISONING IN TOBACCO CHEWERS

To the Editor:—What, if any, are the harmful effects of chewing tobacco while exposed to the fumes of lead daily, without a mask? This is an industrial question asked of me for decision. Will you kindly give me your opinion and references in the literature?

M. D. New Jersey.

ANSWER.—This question, as interpreted, is whether or not the probability of lead poisoning is increased as a result of tobacco chewing by workers during periods of exposure to lead. So simple a matter as this has led to highly divergent opinions. In nearly every report based on any industrial hygiene survey on lead-using departments or industries, a sentence or two may be found referable to tobacco chewing. In some reports, definite statements may be found recommending the prohibition of tobacco chewing. In others, equally strong recommendations may encourage tobacco chewing as a commendable preventive measure. The facts are these: In some lead-using trades, such as painting, the fingers may become smeared with lead, which may be transmitted to the mouth with every chew of tobacco, and particularly with shredded tobacco in contrast to plug tobacco, which is now little used. This has led to an unfavorable attitude in painting and similar trades. Advocates of tobacco chewing point out with accuracy that tobacco chewers carefully avoid swallowing saliva and are given to much spitting, thus removing from their mouths some of the lead that may be present as a result of dust or other exposure. Further it is to be recognized that some chewing tobaccos contain lead as a result of lead compounds used as insecticides during the growing stage of tobacco. The amount is not large, but it may be detected in qualitative amounts in many samples. In this particular instance the query points out that the exposure of lead is in the form of fume. This is a special factor which must be considered in addition to the transfer of lead to the mouth by fingers contaminated by lead.

EDEMA OF CONJUNCTIVA

To the Editor:—A white man, aged 63, has been a locomotive engineer for the last twenty-five years. In the past four months he has noticed a slight swelling of his eyelids, especially in the morning, and following a day's work on the railroad driving a locomotive 300 miles. Both eyelids of each eye are involved. The swelling has been receding during the day, only to return the next morning. Recently (in the past two weeks) it has persisted throughout the day. There are no other complaints. There is no history of illnesses, operations or allergy. Physical examination is completely negative, except for the palpebral edema. The corneas are clear, the conjunctivae slightly injected. The eyegrounds negative. The nose is clear and the teeth have all been removed. The blood pressure is 140 systolic, 93 diastolic. The heart and lungs are normal. The abdomen is normal. The extremities show no edema. Laboratory studies reveal: blood urea 13.0 Gm.; creatinine, 1.5; blood sugar, 110; red blood cells, 4,850,000; white blood cells, 7,500; hemoglobin, 88 per cent; differential counts, normal. Urinary studies show no albumin, sugar or casts on repeated examinations. I am unable to explain the cause of this local edema. Could it be due to the occupation, with exposure to the wind while driving the locomotive? Could you suggest any further studies or explain the cause of this condition? Any treatment?

JOHN C. ULLERY, M.D., Philadelphia.

ANSWER.—Edema of the conjunctiva and eyelids may be due to such a variety of causes that a rather careful study of each individual case is a necessity. Among the commoner causes are chronic conjunctivitis, chronic inflammation of the accessory nasal sinuses, trichinosis, mild tenonitis, or meibomianitis. It is possible that, in the case here cited, exposure to the continuous wind while running a locomotive may be the exciting factor. It is suggested that the patient be instructed to wear fairly air-tight goggles, such as are used by airplane pilots when in open cockpit planes, and that a mild nonirritating wash be prescribed.

CARBON MONOXIDE POISONING

To the Editor:—Last spring I was called to see several members of one family who were all suffering from dizziness, prostration and faintness. Even the family dog had fainted. Recently gas had been installed for heating purposes and the air was much vitiated by the natural gas used in the heating plant. The degree of the contamination must have been high. Fresh air restored them all. Now there is a suit of damages pending. I have not been able to find satisfactory literature on the subject. What are the pathologic changes in such cases and amount and duration of the injury?

N. C. IKNAYAN, M.D., Charleston, Ill.

ANSWER.—There is every indication that the described accident represents carbon monoxide poisoning, unless in fact partial asphyxiation was brought about by accumulation of natural gas to the point at which an oxygen deficiency developed. Natural gas commonly contains only a low concentration of carbon monoxide, although artificial gases may be rich in carbon monoxide. In the absence of carbon monoxide in the gas or as a product of incomplete combustion, the gases making up natural gas are chiefly asphyxial in their action. Carbon monoxide goes further in its harmful action in that much lower concentrations are dangerous and because an actual combination takes place between hemoglobin and the carbon monoxide to the end that, even though oxygen is present in the atmosphere, it may not be taken up or partially may be prevented from being taken up by the presence of carbon monoxide in combination with the hemoglobin. Unless the acute manifestations were severe, and unless sequelae developed within a period of two weeks after the last exposure, it is quite believable that no persistent harm may have been produced. These

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patients are prone to develop neuroses, neurasthenic states and insomnia, and occasionally actual psychoses arise. The ultimate outcome of nonfatal gassing from asphyxiants largely depends on the extent of injury to the brain during periods of anoxemia. Minute diffuse hemorrhage often leads to permanent neurologic or psychiatric disturbances. The circumstances described in the query suggest a defective installation or perhaps improper operation. Every effort should be made to ward off the possibility of a recurrence of the accident described. In the event of remaining doubt, tests for the presence of carbon monoxide should be made with some such instrument as the continuous carbon monoxide indicator, one or more of which usually are available in most cities and frequently may be found in state department of health laboratories. Ampule detectors may be purchased at low cost. When one of these ampules (which contain palladium chloride in acetone) is broken and suspended in an area suspected of containing carbon monoxide, its contents will turn black in the presence of that gas. This method is sensitive only to a minimum of 0.05 per cent, which percentage constitutes a distinct hazard. Any one of the following publications will furnish extensive additional data:

Henderson, Yandell, and Haggard, H. W.: Noxious Gases, New York, Chemical Catalog Company, 1927.

Carbon Monoxide Poisoning and the Automobile Exhaust: Review of Literature by the Special Subcommittee of the Committee on Public Health Relations of the New York Academy of Medicine, Bulletin of the New York Academy of Medicine, August 1926, pp. 402-440.

Hamilton, Alice: Industrial Toxicology, New York, Harper & Brothers, 1934.

SINUSITIS IN CHILDREN

To the Editor:—A boy, 5½ years of age, weight 45 pounds (20 Kg.), height 46¾ inches (142 cm.), has a persistent pulse of 100 to 120 during the day and from 76 to 84 while sleeping. No pathologic condition exists in the heart, although there is quite an irregularity while sleeping. The temperature varies from 99 to 99.6 F. The weight has been constant for about six months and the appetite has been poor. The child has been active and does not tire easily. About a year ago, following an acute nasopharyngeal infection, his tonsils and adenoids were removed, and there has been a slight elevation of temperature and increased pulse rate since then. There is moderate enlargement of the anterior cervical glands and frequent sneezing especially in the morning, with frequent attacks of coryza. Roentgenograms of the chest and sinuses give negative results. Three tuberculin tests (one old tuberculin, one Mantoux, and one purified protein derivative) have all been negative. Because of symptoms and what observations have been made, this condition has been diagnosed as sinusitis. The child rarely complains of headaches. There is no kidney disturbance, and the bowels are normal. The boy is an only child of healthy parents and has had good care. He has had iron, vitamin and malt tonics during the past year and attended kindergarten the last half of the past school year. The school activity was very tiring to him. He has been immunized against scarlet fever and diphtheria and has been vaccinated for smallpox. During the past two years he has had measles, whooping cough and chickenpox. Please advise me on the following points: 1. In the absence of roentgen evidence is one still justified in considering the condition as being due to sinusitis? 2. Would mixed stock vaccines aid in clearing this up? 3. Is a pulse rate of 100 to 120 and a temperature of 99 to 99.6 unusual in children of that age? 4. Is it logical to allow this boy the activity of other children of the same age?

M.D., Nebraska.

ANSWER.—The paranasal sinuses as a rule are not fully developed until the middle period of childhood. The ethmoid cells are present at birth. The sphenoidal sinus is very small in the first year, and the frontal sinus is not present as a rule before the third year. The maxillary sinus develops at about the same period. The sinuses may become infected as soon as they are developed. The diagnosis of sinusitis should be made on the basis of clinical symptoms and confirmed by the x-rays. In the absence of clinical observations and evidence furnished by the x-rays, the existence of sinusitis is improbable.

2. If the diagnosis of sinusitis cannot be established, the use of mixed stock vaccines would not be indicated. There is considerable question in the minds of bacteriologists and clinicians whether mixed stock vaccines are of value even when sinusitis is present.

3. A moderate elevation of temperature and an increase in pulse rate are not uncommon in neuropathic and delicate children, though in every instance one should accept this statement only after a careful and most complete examination in order to exclude infection, organic or endocrine disorder, or a functional disturbance that comes from fatigue or overactivity. Many an asthenic child shows a slight elevation of temperature and an increased pulse rate and eventually grows to be normal and robust.

4. The child should be permitted to partake of as much exercise and activity as his strength will allow. When he becomes fatigued, he should temporarily desist from activity.

LATENT MALARIA

To the Editor:—A woman, aged 40, has suffered for the last ten or twelve years from weakness and severe pains which seem to run through her veins. At times she has what she calls "shakes," when she seems to become cold. I have seen her in only one of these attacks, a mild one she said, and at that time her temperature was 103 F. and she seemed to me to be having a malarial chill. That was four or five months ago and there have been no recurrences. The pains of which she complains come on every few days; in fact, she says that she is rarely comfortable but that the more severe suffering occurs at irregular intervals. The suffering seems to be intense and on one occasion I gave her half a grain of morphine before any substantial relief was obtained. After an attack she is very weak; she has spent at least three fourths of her time for several years in bed. She is fairly well nourished and her appetite and her digestion are good. The blood pressure is around 105 systolic and 65 diastolic. The heart is normal, the temperature usually about 98. The urine is normal. Menstruation is normal. There was some anemia a few months ago but this responded to iron therapy. She has been pregnant three times since this condition began and she says that as well as she can remember she felt well and had no "shakes" during the time she was pregnant. During the five months that I have been attempting to treat her she has had iron and other tonics and responded very well as far as her blood picture is concerned but gained little or no strength. Quinine was given on the supposition that an atypical malaria might be causing the trouble. There have been no more "shakes" and no fever but the pain and weakness have remained unchanged. Mentally the woman seems to be quite well balanced and shows absolutely no evidence of hysteria or other mental illness. Can you give me any suggestion as to etiology and treatment? Because of the fact that she was well when pregnant I have thought of using an extract of pregnancy urine but the cost has been against that; however, if in your opinion such treatment would be logical, I will try it.

M.D., Colorado.

ANSWER.—Most likely, this patient has had latent malaria for many years. The treatment with quinine stopped the chills and fever, but the pain and weakness that have remained may be associated with some malarial infection, which still persists. A careful blood examination should be made to determine the presence of a malarial infection and this should include stained blood smears. If the examination should reveal any evidence of malaria a prolonged, thorough course of quinine should be given, and it would be well to combine this with iron and small doses of arsenic. The patient should take a high caloric, well balanced diet with enough vitamins and she should be encouraged to do some daily gymnastic exercises. Even though the blood examination should not at this time reveal any evidence of malaria, it may still be wise to follow the plan outlined.

PARATHYROID DYSFUNCTION IN PREGNANCY

To the Editor:—Two women, aged 26 and 40, complain of "an achy tightness" in the lower limbs, coming on about the fourth month of pregnancy and lasting for from three to five months after delivery. This discomfort usually starts in the buttock or calf and extends to the arch of the foot and the toes. It comes on only after sitting or lying still for a while, and relief comes only after movement, or massage, if the limb happens to be cold. Unless something is done, the sense of tension becomes so great that the limb jerks involuntarily. There is no history of chorea or rheumatic infection in either patient. Calcium therapy was tried in the case of the younger woman without relief. The older woman has had this through repeated pregnancies which were normal; the younger was a primipara and had slight preeclamptic symptoms during the last two weeks. Can you give me any suggestions as to etiology and therapy?

M.D., Colorado.

ANSWER.—The symptoms mentioned by the correspondent are too vague to enable any one to make a positive diagnosis. Several conditions might be thought of: an unusual form of tetany; circulatory disturbance due to varicose veins in the pelvis, or faulty circulation in the extremities; neuritis on the basis of vitamin deficiency; some form of essential anemia; a disturbed water balance.

The theory of parathyroid dysfunction seems to cover the situation the best, and treatment along such lines would be indicated.

ATROPINE BEFORE ANESTHESIA—DIVINYL OXIDE

To the Editor:—Could you tell me if the injection of 1/150 grain (0.4 mg.) of atropine previous to a chloroform anesthesia is a safeguard against the cardiac syncope that sometimes occurs in this anesthesia? I have heard that it is. Also could you send me information concerning the new obstetric anesthesia recently introduced—divinyl oxide? I should like to know where it may be purchased and its approximate cost, and whether it has the disadvantage mentioned in the case of chloroform.

ALBERT T. HUME, M.D., Chetek, Wis.

ANSWER.—The action of the vagus nerves can be inhibited with atropine if it is given in sufficient dose; it is obvious that whatever benefit the patient derives from atropine is through this particular effect of the drug, and unless the patient has an idiosyncrasy to atropine it is wise to administer it as part of the preliminary medication before chloroform is adminis-

tered. J. T. Gwathmey (Anesthesia, second revised edition, New York and London, Macmillan Company, 1924, pp. 372-273) recommends the use of 1/100 grain (0.6 mg.) of atropine for adult men or 1/150 grain (0.4 mg.) for adult women, and morphine as a preliminary to chloroform anesthesia. This is particularly true when surgical anesthesia is to be produced with chloroform, but it is also desirable when only the stage of analgesia is to be produced.

Vinethene is the proprietary name of Merck & Company, Inc., for divinyl oxide. The product has been submitted to the Council but does not stand accepted as yet. The Council published a preliminary report on the product Jan. 6, 1934.

USE OF GONADOTROPIC EXTRACTS AND PROGESTIN IN HABITUAL ABORTION

To the Editor:—Among other articles read in THE JOURNAL at different times I came across the subject of treatment of habitual abortion by the use of Antuitrin-S, or follutein. That was in the issue of March 23. I have a patient who has been desirous of having children and has been pregnant four different times. Because of abortions she has been unable to bring the children to term, the closest being seven months. She is now again pregnant at seven months, was in my office today, and again thinks she is going to have trouble. Can you refer me to any kind of serum to be given that might be more certain than Antuitrin-S is known to be, or can you give me some good advice that I might pass on to this would-be mother? I would appreciate any good suggestions of later knowledge you may have.

M.D., North Carolina.

ANSWER.—There are no clinical reports capable of proving that the gonadotropic principle of pregnancy urine (of which follutein and Antuitrin-S are commercial preparations) prevents abortion. There is a considerable amount of clinical experience supporting the theory that the corpus luteum helps to preserve pregnancy by preparing the uterine mucosa and inhibiting uterine contractions, but the use of the extracts now on the market has not been uniformly successful—sometimes they seem to hurry abortion. One of the most convincing series of cases was presented by Falls, Lackner and Krohn at the Atlantic City session. These authors recommend the use of commercial preparations containing progestin (the hormone of the corpus luteum) in threatened and habitual abortion; these may be given a trial. There are many causes of habitual abortion: syphilis, kidney disease, focal infections, hypothyroidism, infantile uterus, avitaminosis and the like. This patient should be kept in bed absolutely, the foot of the bed elevated 10 inches, the bowels moved without straining, progestin given (as described by Falls, Lackner and Krohn), thyroid given if the basal metabolic rate is low or even if normal, a generous diet containing all the vitamins, and calcium and iron.

HERPES GENITALIS

To the Editor:—For the last eight months I have been treating a single woman, aged 33, for what I diagnosed as herpes genitalis, but after every menstrual flow the condition reappears. She states that there is a burning, itching sensation about the vulva, followed in a few hours by the appearance of small, discrete red spots, which rapidly become vesicles and then crust over and disappear in the course of from seven to ten days. I have tried local and general treatment, including topical applications of 40 per cent silver nitrate, 5 per cent iodine, gentian violet, the actual cautery, trinitrophenol suppositories, changing the brand of pads used, using no talcum powder, general intravenous treatment with neoarsphenamine (three doses), calcium and iron tonics, together with ointment of ammoniated mercury and of zinc oxide, but all to no avail. She has no leukorrhea. She states that she has occasional intercourse. The Wassermann reaction is negative. Smears are negative for gonococci and Trichomonas. Can you suggest anything as a possible diagnosis and treatment, excluding venereal warts and faulty hygiene? Please omit name.

M.D., Ontario.

ANSWER.—The patient evidently suffers from herpes genitalis, a most annoying and stubbornly recurrent condition.

Aside from the discovery and removal of the cause, such as genital disorder or diseases of the urinary tract or rectum, the treatment is essentially symptomatic. Occasionally, roentgen therapy is almost specific. Nerve resection merits consideration in severe cases.

STAMMERING

To the Editor:—Please give me the best possible information on treatment for stammering, as to the necessity of going to a school or whether it could be done through the mail, or whether the age would limit the possibility of cure. The patient I have in mind is a man, aged 33.

CUTHBERT J. LEAVY, M.D., Freeport, Ill.

ANSWER.—Thirty-three years is a good age, as responsibility and determination are present, although treatment takes longer at that age. If the patient has stammered all his life, it will take anywhere from nine months to two years. Large cities have specialists in the treatment of stammering. Cleveland shows the best school statistics, as it has practically eliminated adult stammering. Private schools for stammering are often unreliable, sometimes good. Treatment by mail cannot be watched and varied according to the peculiarities of the case.

CONGENITAL DEAFMUTISM

To the Editor:—A man, now 25 years of age, had at birth bilateral supernumerary thumbs. These extra appendages were smaller than the normal thumbs but were complete to the extent that they had the usual joint structures with apparently healthy blood and nerve supplies. The mother of the patient was anxious to have these congenital thumbs removed, but the family physician advised against their too early removal, stating that if the operation was performed at too young an age it would cause the patient to be a mute. However, the mother became impatient at the advice of the physician and took her son at the age of 2 years to a nearby medical center. At this time the patient appeared normal in every respect, with no pathologic disturbance of any of the cranial nerves. The supernumerary appendages were removed by a surgeon, and from two to three weeks following the operation the patient became a mute. He has not spoken a word since that time, apparently devoid of his speech and hearing faculties. He has been seen by prominent specialists, who have given a hopeless prognosis but can offer no explanation as to the etiology of the mutism. All neurologic tests are negative except for the loss of the auditory and speech sensations. There appears to be no organic disease present. All laboratory tests, including the Wassermann and Kahn tests, are negative. The family history is irrelevant. Evidently the family physician had a definite reason for advising against the operation. I would appreciate greatly an explanation of the etiology and physiology of the case. I might add that the child has been mentally alert at all times and has made good progress intellectually in an institution for mutism. Is there any possible treatment or is the prognosis entirely unfavorable?

M.D., Michigan.

ANSWER.—This patient undoubtedly is a congenital deaf mute and would not have learned to talk unless the cause of the deafness could have been removed early in life. As he was only 2 years old at the time of the operation, it is not likely that he had learned to talk before that time. The family physician probably knew or suspected that the child was abnormal and was afraid that the operation might later be blamed for the failure of development, and events proved his wisdom.

OPERATION FOR UNDESCENDED TESTIS

To the Editor:—A man, aged 43, has been afflicted with undescended testicles since his birth. They are just above the pubic bone and can be felt. No operation has ever been attempted. Some weeks ago he visited a prominent clinic. What he was told or was not told I do not know. Anyway, since visiting the clinic he has been badly scared and nervous, and he worries greatly about his condition. I want the best advice possible as to what, if anything, should be done with the patient. Is an operation in order and if so, what? What chance is there of making adjustments at this age? Please give definite advice and information. Kindly omit name.

M.D., Kansas.

ANSWER.—The most favorable age to operate on patients with undescended testicles is before the age of puberty. Many patients have been operated on past the age of puberty well on into middle life, with good results. The mobility of the testicle does not indicate the length of the cord. For illustration, a man, aged 34, had one testicle in the peritoneal cavity. This testicle was brought down by operation with little or no difficulty, with a normal result. The question of malignancy has been overexaggerated in the literature. In more than a hundred cases only two were found to be malignant, both patients being in their twenties. The indications for operation are sterility, cosmetic reasons, pain, pain due to trauma, and a malignant condition. There is nothing for the patient to be worried about. An operation would do him no harm and possibly would do him a lot of good. If the patient is sensitive about his appearance or has pain, an operation would be indicated, the gubernaculum technic being used to make the fixation. According to the literature no one can state that the patient when operated on past puberty will be fertile. Fertility has nothing to do with impotence. This patient probably never will be satisfied until an operation is done.

STROPHANTHUS IN CORONARY DISEASE

To the Editor:—In your answer to a query concerning the use of strophanthus in coronary disease (THE JOURNAL, November 9, p. 1543) you state that the only real indication for drugs of the digitalis group in coronary disease is when auricular fibrillation is present. Another important indication for the use of digitalis in coronary disease is when congestive heart failure is present, as manifested by either moist rales at the lung bases, a palpable and tender liver, or edema of the extremities. The digitalis group will prove of value in such instances even with the heart rhythm perfectly regular.

EMMET F. HORINE, M.D., Louisville, Ky.

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Medical Examinations and Licensure

COMING EXAMINATIONS

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY: *Written examination for Group B applicants* will be held in various cities throughout the country, March 14. *Oral examination for Group A and B applicants* will be held in Kansas City, Mo., May 11-12. *Applications for written examination should be filed with the secretary before Jan. 15.* Sec., Dr. C. Guy Lane, 416 Marlboro St., Boston.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY: Written examination and review of case histories of Group B applicants will be held in various cities of the United States and Canada, March 28. *Applications must be filed not later than February 28.* Oral, clinical and pathological examination of all candidates will be held in Kansas City, Mo., May 11-12. *Applications must be received not later than April 1.* Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh (6).

AMERICAN BOARD OF OPHTHALMOLOGY: Kansas City, Mo., May 11. Asst. Sec., Dr. Thomas D. Allen, 122 S. Michigan Ave., Chicago.

AMERICAN BOARD OF ORTHOPAEDIC SURGERY: St. Louis, Jan. 11. Sec., Dr. Fremont A. Chandler, 180 N. Michigan Ave., Chicago.

AMERICAN BOARD OF OTOLARYNGOLOGY: Kansas City, Mo., May 9. Sec., Dr. W. P. Wherry, 1500 Medical Arts Bldg., Omaha.

AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY: New York, Dec. 30. Sec., Dr. Walter Freeman, 1726 Eye St., N. W., Washington, D. C.

ARIZONA: *Basic Science.* Tucson, Dec. 17. Sec., Dr. Robert L. Nugent, Science Hall, University of Arizona, Tucson.

COLORADO: Denver, Jan. 7. Sec., Dr. Harvey W. Snyder, 422 State Office Bldg., Denver.

DISTRICT OF COLUMBIA: Washington, Jan. 13-14. Sec., Commission on Licensure, Dr. George C. Ruhland, 203 District Bldg., Washington.

HAWAII: Honolulu, Jan. 13-16. Sec., Dr. James A. Morgan, 48 Young Bldg., Honolulu.

ILLINOIS: Chicago, Jan. 28-30. Superintendent of Registration, Department of Registration and Education, Mr. Homer J. Byrd, Springfield.

MINNESOTA: *Basic Science.* Minneapolis, Jan. 7-8. Sec., Dr. J. C. McKinley, 126 Millard Hall, University of Minnesota, Minneapolis. *Medical.* Minneapolis, Jan. 21-23. Sec., Dr. Julian F. Du Bois, 350 St. Peter St., St. Paul.

NATIONAL BOARD OF MEDICAL EXAMINERS. *Parts I and II.* Feb. 12-14, May 6-8, June 22-24, and Sept. 14-16. *Part III* tentatively scheduled as follows: Chicago, Jan. 7-9 and New York, Jan. 13-15. Ex. Sec., Mr. Everett S. Elwood, 225 S. 15th St., Philadelphia.

NEBRASKA: *Basic Science.* Omaha, Jan. 7-8. Dir., Bureau of Examining Boards, Mrs. Clark Perkins, State House, Lincoln.

NEW YORK: Albany, Buffalo, New York and Syracuse, Jan. 27-30. Chief, Professional Examinations Bureau, Mr. Herbert J. Hamilton, 315 Education Bldg., Albany.

NORTH DAKOTA: Grand Forks, Jan. 7-10. Sec., Dr. G. M. Williamson, 4½ S. 3d St., Grand Forks.

RHODE ISLAND: Providence, Jan. 2-3. Dir., Department of Public Health, Dr. Edward A. McLaughlin, 319 State Office Bldg., Providence.

SOUTH DAKOTA: Pierre, Jan. 21-22. Dir., Division of Medical Licensure, Dr. Park B. Jenkins, Pierre.

TENNESSEE: Memphis, Dec. 18-19. Sec., Dr. H. W. Qualls, 130 Madison Ave., Memphis.

WASHINGTON: *Basic Science.* Seattle, Jan. 9-10. *Medical.* Seattle, Jan. 13-15. Dir., Department of Licenses, Mr. Harry C. Huse, Olympia.

WISCONSIN: *Basic Science.* Milwaukee, Dec. 21. Sec., Prof. Robert N. Bauer, 3414 W. Wisconsin Ave., Milwaukee. *Medical.* Madison, Jan. 14-16. Sec., Dr. Robert E. Flynn, 410 Main St., La Crosse.

Connecticut July Examinations

Dr. Thomas P. Murdock, secretary, Connecticut Medical Examining Board, reports the written examination held at Hartford, July 9-10, 1935. The examination covered 9 subjects and included 70 questions. An average of 75 per cent was required to pass. Thirty candidates were examined, 23 of whom passed and 7 failed. The following schools were represented:

PASSED School	Year Grad.	Per Cent
University of Maryland School of Medicine and College of Physicians and Surgeons	(1934)	78.1*
Tufts College Medical School (1934) 75, 75.1,* 75.2, 78.1,* 78.7, (1935) 81.8	(1933)	82.8,*
University of Michigan Medical School	(1933)	79.3
Washington University School of Medicine	(1934)	84.7
Columbia University College of Physicians and Surgeons (1935) 80, 80.5, 82*	(1933)	81.2,
Long Island College of Medicine	(1934)	78.6
Syracuse University College of Medicine	(1933)	77.7
University of Pennsylvania School of Medicine	(1933)	83.7
University of Texas School of Medicine	(1933)	75, 83.9
University of Vermont College of Medicine	(1934)	75
McGill University Faculty of Medicine	(1923)	75
Regia Università degli Studi di Roma. Facoltà di Medicina e Chirurgia	(1934)	75
Universität Bern Medizinische Fakultät	(1934)	79.7*

FAILED School	Year Grad.	Per Cent
George Washington University School of Medicine	(1934)	72.5
Georgetown University School of Medicine	(1934)	72.5
University of Louisville School of Medicine	(1934)	69.6
Tufts College Medical School	(1935)	71.6
Jefferson Medical College of Philadelphia	(1934)	73.5
Woman's Medical College of Pennsylvania	(1933)	70.7
Ludwig-Maximilians-Universität Medizinische Fakultät, München	(1934)	66.6†

Fifteen physicians were successful in the oral examination held at Hartford, July 23, for endorsement applicants. The following schools were represented:

PASSED School	Year Grad.	Endorsement of
Yale University School of Medicine (1932), (1933)	(1933)	*N.B.M.Ex.
Georgetown University School of Medicine	(1925)	New York
University of Maryland School of Medicine and College of Physicians and Surgeons	(1931)	Maryland
Tufts College Medical School (1931), (1932), (1934, 2)		N.B.M.Ex.
Albany Medical College	(1933)*	N.B.M.Ex.
Columbia University Col. of Physicians and Surgeons. (1933), (1934) N. B. M. Ex.	(1903)	New York,
Cornell University Medical College	(1929)	New York
Long Island College of Medicine	(1931)	New York
Vanderbilt University School of Medicine	(1932)	S. Carolina

* License has not been issued.
† Verification of graduation in process.

Missouri June Examination

Dr. E. T. McGaugh, state health commissioner, reports the written examination held in St. Louis, June 12-14, 1935. The examination covered 14 subjects and included 105 questions. An average of 75 per cent was required to pass. Two hundred and two candidates were examined, 195 of whom passed and 7 failed. The following schools were represented:

PASSED School	Year Grad.	Per Cent
University of Colorado School of Medicine	(1934)	86
Howard University College of Medicine 82.6, 84.2, 84.2, 86, 87.9	(1934)	81.2,
Loyola University School of Medicine	(1935)	91*
Northwestern University Medical School (1935) 82.5, 85.1, 86.6,* 86.7, 87.1	(1933)	89.5,
Rush Medical College	(1934) 87.1, (1935) 83.9, 89, 90.1	
University of Illinois College of Medicine	(1935) 86, 86.1,* 87.4	
University of Kansas School of Medicine	(1934) 84, 88	
Tulane University of Louisiana School of Medicine	(1934)	85.3
St. Louis University School of Medicine 82.2, 83, 83.7, 84.8, 85.6, (1935) 78.6, 78.9, 80.7, 81.2, 81.2, 81.4, 81.8, 81.8, 82.1, 82.7, 83, 83.1, 83.1, 83.2, 83.3, 83.3, 83.5, 83.6, 83.6, 83.6, 83.7, 83.7, 83.9, 84, 84, 84, 84.2, 84.2, 84.4, 84.7, 84.7, 84.8, 84.9, 85.1, 85.2, 85.2, 85.2, 85.2, 85.3, 85.4, 85.5, 85.6, 85.6, 86, 86.1, 86.3, 86.5, 86.6, 86.7, 86.7, 86.9, 87, 87.1, 87.2, 87.2, 87.2, 87.3, 87.3, 87.4, 87.8, 87.9, 88.9, 89, 89, 89.4, 89.5, 90, 90	(1934)	82,
Washington University School of Medicine (1934) 85.9, (1935) 79.2, 81.1, 81.3, 81.3, 81.5, 81.5, 81.9, 81.9, 82.2, 82.3, 82.5, 83, 83.2, 83.3, 83.3, 83.5, 83.5, 83.6, 83.7, 83.8, 83.8, 83.9, 83.9, 84, 84, 84.1, 84.2, 84.2, 84.2, 84.3, 84.4, 84.6, 84.7, 84.7, 84.8, 85, 85, 85.1, 85.2, 85.2, 85.3, 85.4, 85.4, 85.5, 85.5, 85.5, 85.6, 85.7, 85.7, 85.8, 85.9, 86, 86, 86, 86.2, 86.2, 86.2, 86.4, 86.5, 86.6, 86.7, 86.8, 86.8, 86.9, 87, 87.2, 87.3, 87.5, 87.7, 87.7, 87.9, 88, 88.7, 88.7, 88.8, 89, 89.5, 90.3, 90.9	(1933)	83.8,
University of Oklahoma School of Medicine	(1934)	83.3, 83.5, 87.7
Baylor University College of Medicine	(1934)	87.1
University of Wisconsin Medical School 83.3, 84.8, 86.7	(1934)	80.7,
University of Toronto Faculty of Medicine	(1934)	87.5†
Medizinische Fakultät der Universität Wien	(1932)	79
Schlesische-Friedrich-Wilhelms-Universität Medizinische Fakultät, Breslau	(1934)	77.9‡
Magyar Királyi Pázmány Petrus Tudományegyetem Orvosi Fakultasa, Budapest	(1934)	83‡
Licentiate of the Royal College of Physicians, of the Royal College of Surgeons, Edinburgh, and of the Royal Faculty of Physicians and Surgeons, Glasgow	(1933)	87.5
University of Edinburgh Faculty of Medicine	(1934)	85.2

FAILED School	Year Grad.
Howard University College of Medicine	(1934)
Rush Medical College	(1935)
St. Louis College of Physicians and Surgeons, Missouri	(1921)
Washington University School of Medicine	(1935, 3)
Regia Università degli Studi di Palermo. Facoltà di Medicina e Chirurgia	(1929)‡

Twenty-four physicians were licensed by reciprocity and 1 physician was licensed by endorsement from May 7 through July 30. The following schools were represented:

LICENSED BY RECIPROCITY School	Year Grad.	Reciprocity with
University of Arkansas School of Medicine	(1933)	Arkansas
American Medical Missionary College, Chicago	(1900)	Iowa
Rush Medical College	(1930)	Kansas
University of Illinois College of Medicine	(1912)	Illinois
University of Kansas School of Medicine (1929), (1930), (1932), (1934, 2) Kansas	(1925),	
University of Louisville Medical Department	(1921)	Kentucky
University of Louisville School of Medicine	(1934, 3)	Kentucky
Detroit College of Medicine	(1907)	Michigan
University of Minnesota Medical School	(1930)	Minnesota
St. Louis College of Physicians and Surgeons, Missouri.	(1919)	Tennessee
St. Louis University School of Medicine	(1925), (1926)	Colorado
Washington University School of Medicine	(1933)	Indiana

University of Nebraska College of Medicine	(1933)	Nebraska
Meharry Medical College	(1931)	Tennessee
University of Tennessee College of Medicine	(1932)	Tennessee
University of Virginia Department of Medicine	(1931)	Virginia

LICENSED BY ENDORSEMENT

School	Year Grad.	Endorsement of
Washington University School of Medicine	(1931)	N. B. M. Ex.

* This applicant has completed the medical course and will receive his M.D. degree on completion of internship. License has not been issued.
† License has not been issued.
‡ Verification of graduation in process.

Book Notices

Aphasia: A Clinical and Psychological Study. By Theodore Weisenburg, M.D., and Katharine E. McBride, Ph.D. Cloth. Price, $5. Pp. 634, with 28 illustrations. New York: Commonwealth Fund; London: Oxford University Press, 1935.

Of all the problems of neurology, the problem of understanding the aphasias has been one of the most difficult confronting both the clinician and the researcher. An analysis of the literature reveals that some recent textbooks still closely adhere to the motor-sensory classification, while others follow the lead of Head. Why the technics developed by the clinical psychologist have never previously been applied to this field, where they would be more apt than the purely "physical" approach, is a question that arises in one's mind immediately on realizing the mode of attack of these authors to their problem. The psychologists have developed standardized tests of reading and of speech in all their various divisions. These tests have been used in school systems, but psychologists, not being M.D.'s, have been unequipped to go into the hospital to study aphasia and, having inadequate knowledge of neural anatomy, were unable to approach the problem adequately. The present volume, using Weisenburg's neurologic knowledge and McBride's psychologic technics, does do so. The book naturally begins with a historical introduction demonstrating the development of the theories and ideas about aphasia from the time of Broca to the present. Naturally, the work of Hughlings Jackson, Marie, Head and Goldstein is stressed, but the whole literature is covered in sufficient detail, although not completely, so that one may gain a thorough idea of the problems confronting Weisenburg when he undertook this study. The whole field was disordered, for where previously authors had felt that they were on safe grounds in dealing with aphasia, the work of Head confused the whole issue. The authors point out that, in addition, Head devised several tests which are really very useful. The present work makes no attempt to undertake a thorough reclassification of those disorders called aphasias but rather divides them up into three types, the expressive, the receptive and the expressive-receptive types. There is a fourth group, the amnesic. Under each type is a discussion and one or more cases are presented to illustrate the point, and these cases are demonstrated in such a way that one can see the value of psychologic tests of reading and speech and really understand the nature of each individual problem. The tests themselves are discussed in a chapter in the early part of the work and are more fully described in an appendix. All the information physiologically, neurologically and psychologically that would aid in the understanding of the processes involved are described fully in each case. Also given are a number of illustrations showing drawings made by the various patients, as well as some illustrations of hand writing. There are several tables, which illustrate better than description the results. The conclusions which the authors have at the end of the discussions of cases seems convincing and sound; a number of interesting and heretofore unrealized factors are discussed. An example of one of them is the fact that aphasic cases which seemingly are neurologically similar vary greatly one from the other in the results of their psychologic tests. The authors carefully control their study by giving these tests to a group of normal persons and also to a group of nonaphasic neurologic patients and the distinctions that are drawn and the various comparisons that are made are interesting and instructive. Most neurologists and psychologists who are interested in speech correction or analysis cannot afford to be without this book. It is so carefully done and so attention compelling that it might even prove to be worth its cost to the general practitioner. One may predict that its newness of view and attack may cause a question to arise as to its value in the minds of the older men who are already specializing in this type of work, but it would not be rash to say that it should eventually prove itself to be a solid piece of constructive research.

Onchocerciasis with Special Reference to the Central American Form of the Disease. By Richard P. Strong, Ph.B., M.D., S.D., Professor of Tropical Medicine, Harvard University Medical School, Jack H. Sandground, D.Sc., Assistant Professor of Tropical Helminthology, Harvard University Medical School, Joseph C. Bequaert, Ph.D., Assistant Professor of Entomology, Harvard University Medical School, and Miguel Muñoz Ochoa, M.D., Parasitologist, Salubridad Pública, Guatemala. Contributions from the Department of Tropical Medicine and the Institute for Tropical Biology and Medicine, No. VI. Cloth. Price, $4. Pp. 234, with 103 illustrations. Cambridge: Harvard University Press, 1934.

This is a monograph on the Central American form of onchocerciasis, a helminth infection of man, producing swellings around the adult worm, mainly on the head. It is associated with ocular complications resulting in blindness in extreme cases. Dr. Strong, who investigated the disease in Guatemala in 1931 and 1932, contributes the larger section, containing the epidemiologic and endemiologic studies, clinical and pathologic observations, ocular complications, transmission, immunity, microfilaricidal substances, public health aspects, prophylaxis and treatment. Dr. Sandground attacks the knotty problems of the classification of Onchocerca and critically analyzes the inadequate literature regarding this human helminth and related worms from the horse, cattle and antelope. He gives complete accounts of the adult male and female Onchocerca caecutiens from Guatemalan cases. Dr. Bequaert describes the insect vectors of the larval stages or microfilariae, namely, the black flies or Simuliidae, of the area of the disease in Guatemala, with studies of their life cycle, eggs, larval and pupal stages, enemies and parasites, seasonal incidence, biting and feeding habits, duration of life, prevention, protection and control. Dr. Ochoa adds a succinct summary of epidemiologic facts derived from his observations on the disease in Guatemala.

Onchocerciasis is sharply restricted to coffee-growing districts at an altitude of from 2,500 to 5,000 feet, but not all plantations are afflicted. It occurs largely among Quiche Indians, who form 95 per cent of the population and contribute 98 per cent of the cases. Absence of the disease on a plantation cannot be traced to environmental factors or to absence of Simulium, the insect vector. It may be due merely to absence of infected human beings. This irregularity in distribution and lack of early records of the disease support the hypothesis of relatively recent introduction of the worm but are not conclusive on this point.

Three species of Simulium, all living in the larval stages in swiftly flowing mountain streams, may become insect vectors. The adult flies are small, from 1.5 to 3 mm. in length, fly by day about settlements and plantations, and suck the blood of man from exposed skin of the face and legs. The adult worms live in the tumors, usually on the head. The larval worms, or microfilariae, live in the fluid of the tumor, in the corium of the skin around the tumor, and also migrate to the cornea, iris, conjunctiva and some other parts of the eye, but not in the blood. The saliva of the biting fly seems to attract the microfilaria, and large numbers of the worms are found in flies after feeding on an infected man. Mosquitoes, which draw blood from deeper levels of the skin, were not found to ingest microfilariae. The larval worms pass through three phases in the muscles and other organs of the fly, and increase in length and activity in the final infective stage. When a fly with the infective stage bites man, the worms escape from the mouth parts of the fly and enter the lesion. In less than a year a tumor, containing adult worms, develops in the skin.

The habits of the natives expose them to bites of the flies. More men are infected than women. Tumors may develop on children only a few months of age. The compression of the scalp by hat bands and the custom of supporting back loads by a head band may contribute to the location of the tumor of the Central American form of onchocerciasis in the scalp. In comparable African infections the tumors are rarely on the head.

The disease occurs also in restricted coffee-producing regions in the provinces of Chiapas, Oaxaca and Guerrero in Mexico, where rather heavy infections have been reported. The origin

of the disease, first reported in Guatemala in 1915 and in Mexico in 1926, remains a mystery. The investigations of Dr. Sandground reveal no significant differences between the Central American worm Onchocerca caecutiens Brumpt and the African O. volvolus Leuckart. The insect vectors are different in the two continents and the location of tumors is predominantly but not exclusively different. There is no critical evidence of the introduction into tropical America of the African type of disease by African Negroes. It is possible that differences in the biting habits of the insect vectors in the two continents accounts for the clinical differences in the human host.

This monograph is a fine example of an extensive, comprehensive and critical, cooperative study of epidemiology, endemiology, pathology, transmission and therapy of a puzzling, obscure and, in some respects, mysterious tropical disease involving man, the black flies, and two diverse stages of a nematode worm, perhaps in two continents, and the consequences of the African slave trade.

The Structure and Composition of Foods. By Andrew L. Winton, Ph.D., and Kate Barber Winton, Ph.D. Volume II: Vegetables, Legumes, Fruits. Cloth. Price, $15. Pp. 904, with 303 illustrations. New York: John Wiley & Sons, Inc.; London: Chapman & Hall, Ltd., 1935.

All persons requiring readily available information on the macroscopic and microscopic structure and chemical composition of vegetables and fruits have been looking forward to the printing of the second volume of this highly useful and practical reference compendium. It is another example of excellence of the contributions of recent years being made by American scientists to the technical literature and is the only one of its kind in the English language. The subject matter is well ordered and simply presented. All varieties of fruits and vegetables, even those practically unknown on the American market and table, are represented. The products are grouped according to botanic families. The section on the potato is illustrative of the scope of the material presented. This includes general information, macroscopic structure, microscopic structure, chemical composition, composition of parts of the tuber, influence of locality on composition, relation of development to composition, influence of methods of culture, fertilizers and degree of maturity, changes during storage, losses on boiling, and discussion of potato proteins, acids, carbohydrates, pectins, glucosides, enzymes and mineral constituents. Products of lesser importance of course are less comprehensively discussed. The data are gleaned from world technical literature. The vitamins are outside the province of the book. The authors have devoted much painstaking effort to the compiling of the vast store of data and information in this valuable volume and greatly enriched the fund of available information on food composition, for which many will be duly grateful.

Mechanics of Normal and Pathological Locomotion in Man. By Arthur Steindler, M.D., F.A.C.S., Professor of Orthopedic Surgery, the State University of Iowa, Iowa City. Cloth. Price, $8. Pp. 424, with illustrations. Springfield, Illinois, and Baltimore: Charles C. Thomas, 1935.

This long awaited book is the combination of many years of the hardest type of labor on this and related subjects. It reveals a tremendous amount of allied research and study, especially in higher mathematics. The author has even been perfecting himself in a knowledge of calculus. As a student of orthopedic surgery in America, he is of course well recognized. It is anticipated that this book will stimulate interest and further study of this important subject, which at first seems abstract but which in its application is intensely practical. It concerns such conditions as poliomyelitis, arthritis, fractures, dislocations, postural defects and scoliosis. The chapters that are especially good are those on the mechanics of the human gait, the pathomechanics of the gait, the physical properties of bone and the dynamics of muscle action. The chapter entitled "From Ancients to Haller" is a classic. It would be impossible to produce this type of book without the cooperation of an unusual anatomist. This the author had in the late Dr. Prentiss. Much of the discussion is difficult to understand. The line drawings and photographs are fine. The publishers deserve much credit. Many American or English illustrations would have been more easily understood than some of those taken from foreign publications. It is hoped that in the second edition this and other irregularities will be smoothed out. Many illustrations are too small, and the print requires a magnifying glass. A few illustrations are not very illustrative. There are some duplications: for example, figure 7 (x x) is the same as figure 13 (x x). Figure 6 (x x 15) is the same as figure 8 (x x 14). Figure 6 (x x 14) is marked "flexors" and it should be "extensors." Figure 1 (x 1) is marked McMurray instead of McMurrich. The volume is excellently written, is unique in its approach to its subject and should promptly be recognized as the best book in its field.

Man the Unknown. By Alexis Carrel. Cloth. Price, $3.50. Pp. 346. New York & London: Harper & Brothers, 1935.

In this volume we observe Alexis Carrel, philosopher, as he surveys the human being with a background of knowledge of physiology, biology and medicine. His introductory chapters indicate the extent of our knowledge and many of the points at which new research is needed. He then discusses the necessity for understanding man as the greatest of all sciences, and indicates some of the technical difficulties encountered in this study. Here he indicates the position which animal experimentation may occupy in the course of such research. Especial attention is paid to the necessity of work on dogs. From this point Dr. Carrel passes to a consideration of various special functions and of the manner in which these functions are disturbed by disease. He emphasizes particularly the effects of the glands of sex and the part played by the male and female elements in reproduction. Especially significant is a paragraph on the working of the normal body.

The difficulties with the volume from the point of view of the physician begin with the fourth chapter on mental activities. Here Dr. Carrel must depart from established scientific fact and enter into the field of imagination. He accepts the ideas of telepathy and clairvoyance and he analyzes the esthetic, mystical and religious senses. He realizes, however, that mental activities depend also on physical activities and in this chapter provides an exaltation of the testis as a motivating organ, which should give considerable stimulation to the rejuvenationists. In fact, he proceeds in chapter 5 to a discussion of longevity and rejuvenation and he wisely concludes that "added years without health and strength would be a calamity. . . . The number of centenarians," he says, "must not be augmented until we can prevent intellectual and moral decay and also the lingering diseases of old age." The human being will not, he believes, ever vanquish death or physiologic time. Dr. Carrel then considers the adaptive functions of mankind and finally the individual human being and the remaking of man. He recognizes the impossibility of overcoming biologic laws but at the same time emphasizes the desirability of applying the scientific knowledge we now have for greater health and great power.

Here then is a book full of sound thought on many topics but unscientific so far as the author enters into the imaginative field in relationship to processes that are not yet understood. Certainly the book will repay the time spent on it by any thinking man. It is unfortunate, however, that the publisher in choosing a type for the book has selected one so ornamental as to make reading a little difficult.

Clinical Tuberculosis. Edited by Benjamin Goldberg, M.D., F.A.C.P., F.A.P.H.A., Associate Professor of Medicine, University of Illinois College of Medicine. With the collaboration of thirty-three contributors. In two volumes. Cloth. Price, $22. Various pagination, with 649 illustrations. Philadelphia: F. A. Davis Company, 1935.

This consists of chapters prepared by a large number of authors and edited by Dr. Goldberg. Almost all phases of the disease are covered, from epidemiology, bacteriology, pathology, complications, diagnosis, classification, treatment and prognosis to prevention. The first chapter, by Drolet, on epidemiology, takes into consideration the tuberculosis record for New York, Philadelphia and Boston for 120 years. He illustrates definitely that the mortality has been decreasing for more than fifty years. He calls attention to the fact that until recently in many places the tuberculosis mortality rate was highest during the first year of life but that now the picture has been radically altered. For example, in 1900 in the ten original registration states 350 male infants under 1 year of age died of tuberculosis for every hundred thousand living, but by 1929 the mortality rate for male infants had dropped from 350 to 58.

Among female infants in 1900, 295 died of tuberculosis per hundred thousand living, but in 1929 this figure had dropped to 52, while the rate for young women between 20 and 25 years was 120 per hundred thousand living in 1929. Drolet believes that this marked decrease in infant mortality is due to segregation of open cases of tuberculosis and increased home and sanitary supervision of all members of families with tuberculosis. This chapter contains much valuable information concerning tuberculosis among the various races of people, as well as the effect of occupation and other factors on the disease. The chapter on the pathology of pulmonary tuberculosis, by Jaffé, deals first with the primary form of the disease and finally with the clinical form. Ranke's classification is followed. Ornstein and Ulmar have presented excellent chapters on the physical diagnosis and classification of pulmonary tuberculosis, in which a complete description is given of the various abnormal physical signs. These chapters are followed by a rather elaborate discussion of the roentgen examination by Potter. The concluding chapter in the section on diagnosis is written by Goldberg, who discusses the subject of differential diagnosis. The entire subject of therapy from diet, strict bed rest, through collapse therapy, is well presented by a number of authors, including Matson, Coryllos, Hedblom and Mayer. The two volumes are profusely illustrated and contain a large amount of valuable information for all physicians interested in tuberculosis.

Pellagroide Dermatosen an Geisteskranken mit besonderem Hinblick auf das Vorkommen solcher bei Schizophrenen und mit Beiträgen zur Beleuchtung gewisser ätiologischer und pathogenetischer Verhältnisse bei Dementia praecox und Pellagra. Von Paul J. Reiter, Dr. med., Abteilungsarzt am Sct. Hans Hospital, II Dänemark, und Jakob Jakobsen. Paper. Pp. 125, with 20 illustrations. Copenhagen: Levin & Munksgaard; Leipzig: Georg Thieme, 1935.

This is a clinical study of 955 mental patients in a Denmark asylum, in 182 (19.3 per cent) of whom pellagroid skin lesions were found, mainly of a hyperkeratotic type on the elbows, knees, hands and face. The highest incidence was seen in the encephalitis cases (60 per cent), next in the schizophrenic group (21 per cent) and third (8.6 per cent) in the manic depressive class. Fourteen cases were considered to be true pellagra on account of the association of a severe dermatitis with stomatitis, diarrhea and neurologic symptoms. Other skin disorders, such as acne and rosacea, were frequently found in the dementia praecox group. As controls, 881 criminals in the state prison were investigated to determine the effect of a low vitamin diet on the frequency of skin changes, and only 4.5 per cent were found to have pellagroid dermatoses. Investigations of the gastric contents and blood changes in the dementia praecox group with skin lesions showed the frequent association of hypochlorhydria and achylia with lymphocytosis and eosinophilia. The observations recorded are of interest in showing the frequent occurrence of "pellagroid" dermatoses in mental cases, although nothing new has been added to explain their pathogenesis. Similar observations have been made in this country in the so-called pseudopellagra occurring in alcoholic addicts.

The Patient's Dilemma: A Public Trial of the Medical Profession. By S. A. Tannenbaum, M.D., and Paul Maerker Branden. Cloth. Price, $2.50. Pp. 278. New York: Coward-McCann, Inc., 1935.

The medical author of this book apparently graduated from the College of Physicians and Surgeons, New York, thirty-seven years ago. He is now exposing the hideous truth about the commercial side of the practice of medicine. When he gets all through with his exposure he has done nothing but expose his own ignorance of the situation. Perhaps a better recognition of the true state of affairs would have kept him from such an out-and-out exhibition of bad taste, exaggeration and malice as is represented by this volume.

At the time of this writing the book has already been before the public for some months and it apparently has fallen with a dull and unexciting thud. Apparently the author intended to rouse public wrath and to shake public confidence in the medical profession but has served only to reveal the great confidence that actually exists and the inability of scandal mongers within or without the profession to shake that confidence. It would be, therefore, a work of supererogation to analyze the volume page by page. One finds the usual criticisms relative to fee splitting and to the abuse of physical therapy apparatus for purposes of income. One finds attention called to the small incomes of a good many doctors and to the large charges occacionally associated with major medical procedures. The book is utterly inadequate in its consideration of present plans for medical practice and in its defense of socialized medicine.

Some Thoughts of a Doctor. By Frederick Parkes Weber, M.A., M.D., F.R.C.P. With a preface by Sir W. Langdon Brown, M.A., M.D., F.R.C.P., Regius Professor of Physic in the University of Cambridge. Cloth. Price, 6s. Pp. 183. London: H. K. Lewis & Co., Ltd., 1935.

These essays, thirty-one in number, range from such subjects as "Nature and God" and "The Rights of Nations" to "The Gambling Spirit" and "Exercise, Work, Rest and Sleep." They represent the meditations of a scholarly physician over various aspects of life and living. The same breadth of information which the author has shown in his medical writing is exemplified in his essays on subjects far removed from medicine. Many of them are reminiscent of Osler's treatises, though they are highly individual and original in thought. While the writer lacks an engaging literary style, the essays are stimulating. The physician will enjoy taking issue or agreeing with the author on the many subjects he has treated provocatively.

A Textbook of Clinical Neurology with an Introduction to the History of Neurology. By Israel S. Wechsler, M.D., Professor of Clinical Neurology, Columbia University, New York. Third edition. Cloth. Price, $7. Pp. 826, with 162 illustrations. Philadelphia & London: W. B. Saunders Company, 1935.

This edition appears with minor changes in the text throughout and with the valuable addition of a chapter on the history of neurology. This chapter, although containing a good deal of factual material, does not accomplish its purpose as an addendum to the book at large. It is unfortunate that selected bits of neurologic history are not placed in the various chapters of the diseases to which the history refers. Otherwise the book is essentially like the second edition with a few minor alterations. Dr. Wechsler has had the good judgment to maintain the book in the form and style that created its intense popularity. The book is an excellent and valuable introduction to clinical neurology.

Recent Advances in Diseases of Children. By Wilfred J. Pearson, D.S.O., M.C., D.M., Physician in charge of Children's Department, University College Hospital, London, and W. G. Wyllie, M.D., F.R.C.P., Physician to Out-Patients, Hospital for Sick Children, Great Ormond Street, London. Third edition. Cloth. Price, $5. Pp. 566, with 61 illustrations. Philadelphia: P. Blakiston's Son & Co., Inc., 1935.

The authors of this concise treatise have maintained the editorial policy of the previous editions in presenting a connected outline of the diseases in childhood. For the most part many of the chapters have been recast and revised. Those who are familiar with the previous editions will find an apparent similarity, but this is only in form. The authors have sought mainly to formulate principles for solving problems of disease in children. These do not change as often as scientific data, but the reader often benefits by their restatement. The book is unique in its style and manner of presentation, and the physician and student will benefit by its concise correlations. It is not recommended as a textbook in pediatrics but as a complementary volume.

Aids to Ophthalmology. By N. Bishop Harman, M.A., M.B., F.R.C.S., Consulting Ophthalmic Surgeon, West London Hospital. Eighth edition. Cloth. Price, $1.25. Pp. 242, with 203 illustrations. Baltimore: William Wood & Co., 1935.

This is a pocket size quiz compend type of book which attempts to cover the anatomy, physiology, diseases, refraction and surgery of the eye, without an attempt to be complete in any. Unusual diseases "are intentionally omitted." There are numerous illustrations and several tables. A chapter on eye conditions in school children is based on 22,000 examinations in London. The diseases and refractive errors of this group are discussed. One chapter deals with the visual requirements for the various governmental and municipal services and industries in Great Britain. The book is concise and is of value when preparing for examinations or reviewing the subject but is too brief to serve as a textbook.

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Medicolegal

Malpractice: Facial Paralysis and Deafness Following Mastoidectomy.—One of the physician-defendants performed a "radical" mastoidectomy on plaintiff. Facial paralysis and deafness in the ear involved resulted. The plaintiff, contending that he had consented only to a "simple" mastoidectomy, sued the defendants for performing an unauthorized operation and for negligence in connection with the operation. The jury returned a verdict for the plaintiff for $30,000 and, after first rendering judgment on the verdict, the circuit court reversed itself and ordered a new trial. The plaintiff appealed to the Supreme Court of Wisconsin.

If, said the Supreme Court, the radical operation was performed without the consent of the patient, either express or implied, then the operator was guilty of an assault and would be responsible for damages resulting therefrom. The court, however, agreed with the circuit court that the case was ineptly submitted to the jury with the result that there was a lack of findings by the jury on which to base a valid judgment as to the amount of damages resulting from the "radical" operation as distinguished from the "simple" operation. The case should have been submitted in such a form as to exclude from consideration, in assessing damages, the expense, pain and natural or necessary results of the "simple" operation to which the patient concededly submitted. While it may be difficult to draw an exact line between the extent of the "simple" operation and the beginning of the "radical" operation under the circumstances of the case, the assessment of damages must nevertheless be made with that distinction in mind. This error was of sufficient gravity, in the opinion of the court, to warrant the granting of a new trial.

The trial court committed no error in permitting a physician, licensed in Iowa, to testify as an expert witness for the plaintiff. Section 147.14 (2), Wisconsin Statutes, provides, in part:

> Practioners in medicine, surgery or osteopathy licensed in other states may testify as experts in this state when such testimony is necessary to establish the rights of citizens or residents of this state in a judicial proceeding and expert testimony of licensed practitioners of this state sufficient for the purpose is not available.

When a party has shown, said the court, the taking of adequate steps to secure the aid of Wisconsin physicians, and that he has been unable to secure it, he may call as a witness an expert from without the state. It was for the trial court to determine whether or not the plaintiff in this case had in good faith attempted to secure the aid of Wisconsin physicians, and, having so determined, in the absence of a showing of an abuse of discretion, the determination is final. The action of the trial court in granting a new trial was affirmed.—*Paulsen v. Gundersen (Wis.), 260 N. W. 448.*

Evidence: Exhibition of Injured Knees to Jury.—Sylvia Mayson was employed as an entertainer in a cabaret. As a result of a collision between the taxicab in which she was riding and a truck, she sustained injuries and sued the cab company and the owner of the truck. The trial court gave judgment for her and the defendants appealed to the Court of Appeals of Maryland.

At the conclusion of the plaintiff's testimony, and after she had exhibited scars on her face, neck and forehead to the jury, her counsel requested permission to exhibit to the jury the injuries to her knees. Counsel stated that his desire to have his client exhibit her knees was because of her occupation, she having testified that her vocation was that of entertainer, dancer and singer, and that the disfiguration of her knees vitally affected her in this respect. The trial court, in acceding to counsel's request, stated that while ordinarily such scars on the knees would not be an element of significance, yet in view of the plaintiff's occupation the evidence was admissible in this case. The admission of this form of evidence, said the Court of Appeals, was entirely in the discretion of the trial court, and there was no impropriety or error in its admission. The plaintiff had testified that she had two "brush burn wounds" on her knees, the scars of which remained. The exhibition of her knees merely corroborated her oral testimony in this respect. In its ruling, the Court of Appeals cited *Chicago & A. R. Co.* v. *Clausen,* 173 Ill. 100, 50 N. E. 680, a case in which the Supreme Court of Illinois upheld the lower court in permitting a plaintiff to exhibit to the jury a rupture alleged to have been a result of an accident.

Finding no error in the rulings of the trial court, the Court of Appeals affirmed the judgment for the plaintiff.—*Zeller v. Mayson (Md.), 179 A. 179; Rubinstein v. Same (Md.), 179 A. 179.*

Evidence: Opinion of Expert Witness Based on the Opinions, Inferences and Conclusions of Other Witnesses.—The opinion of an expert witness, said the Court of Appeals of Maryland, however qualified he may be to speak, cannot be predicated, either in whole or in part, on the opinions, inferences and conclusions of other witnesses. A witness who is qualified as an expert, who has heard the entire testimony in the case, and who assumes the truth of it all, may base his opinion on such testimony, where not conflicting, but the *opinions* of other witnesses may not be incorporated in the question or taken into account in giving his answer.—*Mt. Royal Cab Co., Inc., v. Dolan (Md.), 179 A. 54.*

Medical Practice Acts: Jurisdiction to Reinstate Revoked License in Court Not Board.—The plaintiff, a physician, was convicted of violating the Harrison Narcotic Act and sentenced to the penitentiary. While he was so confined, the board of medical examiners revoked his license to practice medicine and the board's action was sustained by the Supreme Court of Iowa. *State* v. *Hanson,* 201 Iowa 579, 207 N. W. 769. After serving his sentence, the plaintiff returned to Iowa and began anew to practice medicine but was enjoined from continuing to do so. Subsequently, the board of medical examiners, with the consent of the district court, gave him what the court refers to as a "sort of license to practice under" another physician, which license was later withdrawn. On numerous occasions, the plaintiff petitioned the board of examiners to reinstate his license and on May 11, 1933, the board passed a resolution denying the application for reinstatement, contending that a statute, passed after the revocation of the license, transferred from the board to the district court jurisdiction in all matters relating to revocation of licenses. Thereupon the plaintiff instituted the present proceedings to compel the board to issue the license. From a decree by the district court in favor of the plaintiff, the board appealed to the Supreme Court of Iowa.

At the time the plaintiff's license was revoked, said the court, the medical practice act conferred on the board of examiners the right to revoke or suspend a license "for such a time as the board of medical examiners may determine." Subsequent legislation, however, divested the board of this right and conferred it on the district court of the county in which the physician involved resides. Hence, the board correctly in this case concluded it had no jurisdiction to reinstate the plaintiff's license. The district court erred in considering the merits of plaintiff's case. The sole issue was a question of jurisdiction. The decree of the district court was therefore reversed.—*Hanson v. State Board of Medical Examiners (Iowa), 260 N. W. 68.*

Charitable Hospitals: Liability for Negligence in the Selection of Servants.—The plaintiff filed complaint against the defendant, a charitable hospital, alleging that the hospital was negligent in selecting incompetent and unskilful employees through whose negligent care and treatment she was injured. The trial court dismissed the complaint, and the plaintiff appealed to the Supreme Court of Wisconsin.

The plaintiff contended that the defendant, although it was a charitable institution, must use due care in the selection of its employees to whom it entrusts the care and treatment of its patients, and that this is a nondelegable duty, for the nonperformance of which the hospital is responsible. It was conceded that a charitable hospital is not liable for the negligence of its employees. The basis of this rule, said the court, is that these hospitals perform a quasipublic function, akin to

that performed by municipalities in performing governmental functions, and justice and public policy require that the doctrine of respondeat superior shall not be applied. But, said the Supreme Court of Wisconsin, the reason for the rule as applied to the negligent acts of servants applies with equal force whether the negligent act is of a nurse or other employee employed by the hospital, or the negligence of its manager or managing board in selecting the nurse or other employee. The hospital can act only through its agents in selecting its employees. The agent who selects the employee is an agent of the hospital in no different sense than is the employee thus selected. The duties of the two agents are different, but the agency relation is the same, and if the doctrine of respondeat superior does not apply to the acts of one, it should not to the acts of the other. On reason, therefore, if a charitable hospital is exempt from liability for negligent acts of its incompetent employees committed on its patients, it is exempt from liability for negligence of its managing agents in selecting those incompetent employees. Precisely the same reason lies for exemption in both cases and it lies to precisely the same extent. A physician is in many cases the managing agent of a hospital. That such a hospital should be exempt from liability for the tort of its managing agent in himself negligently performing an operation which he was incompetent to perform, and should be liable for the negligence of the same physician in delegating another physician to perform it who was incompetent and negligently performed it, is utterly irreconcilable, the court concluded. The judgment of the trial court, dismissing the complaint, was affirmed.—*Schumacher v. Evangelical Deaconess Soc. of Wisconsin (Wis.), 260 N. W. 476.*

Malpractice: Tonsillectomy Performed on Intoxicated Patient.—The defendants removed the tonsils of plaintiff's husband under a general anesthetic. Three hours later he died. Attributing the death to the fact that the defendants operated on the patient when he was intoxicated, the plaintiff sued. The trial court gave judgment for the defendants and the plaintiff sought a reversal in the court of civil appeals of Texas.

The expert testimony in this case, said the court, does not show that any negligence on defendants' part was the proximate cause of the patient's death. During a period of two days the patient consumed approximately 7 pints of intoxicating liquor. About 7 o'clock in the evening of the second day, after eating a large meal, he went to a hospital for the purpose of having his tonsils removed by the defendants. He was operated on about 8 o'clock that evening, the operation consuming between forty and forty-five minutes. Following the operation the patient's condition was good. About 11:45 p. m. his pulse suddenly became very weak, his respiration slow and shallow, and he died. The plaintiff's only expert witness did not testify that the patient's death was caused by the negligence of the defendants. He did testify that if a drunken person is operated on that certain bad results may follow; that a general anesthetic given to a drunken person will sometimes throw him into delirium tremens; that a drunken person will require more anesthetic than a sober person, and that there is great danger of heart failure and pneumonia. The undisputed evidence, the court said, showed that the patient did not develop pneumonia; that it did not take more than the usual amount of anesthetic to produce insensibility; that the patient did not vomit as a result of the anesthetic; that the patient's blood pressure was normal; that he did not develop delirium tremens, and that he did not have heart failure either while the operation was being performed or after the operation within the period which the expert witnesses stated it could have occurred as a result of the intoxication. The preponderance of evidence established the fact that the patient's death was the result of a blood clot getting into the blood stream and finding its way to the heart. Eight expert witnesses testified that the patient's death was not due to the fact that he was operated on while intoxicated; none testified that intoxication had anything to do with his death. A physician is not a warrantor of cures nor does the rule of res ipsa loquitur apply in a malpractice case. The fact that the operation was not successful does not establish the fact that the physicians were negligent and that such negligence was the proximate cause of the death. Even if there were evidence that the patient's intoxication was a proximate cause of his death, the evidence also shows, with at least equal clarity, that an embolism may have been the sole proximate cause of the death. The jury will not be permitted to guess which of two causes may have caused the death; verdicts must be based on something more than speculation, conjecture or inference.

The plaintiff contended that it was the duty of the defendants to secure her permission before operating on her husband. While it is true, said the court, that a physician must secure the consent of the parent to operate on a minor, a wife is not the guardian of her husband and her consent is not necessary before a physician is authorized to perform an operation on him.

Concluding that there was no medical expert testimony to establish the fact that the patient's death was proximately caused by the negligence or want of proper care and skill on the part of the defendants, the judgment of the trial court for the defendants was affirmed.—*Barker v. Heaney (Texas), 82 S. W. (2d) 417.*

Malpractice: When Arbitration Agreement Does Not Deprive Court of Jurisdiction.—The Ross-Loos Medical Group entered into an agreement with the Los Angeles Police Relief Association, whereby the medical group became obligated to furnish certain medical and allied services to subscribers or members of the relief association, and their families. The wife of a member of the relief association alleged malpractice in treatment given her by a physician attached to the medical group, and she and her husband sued the group. The defendant medical group alleged that the cause of action was subject to compulsory arbitration under the terms of the agreement, which provided, in part, that—

> Complaints made by either or any of the parties interested shall be forthwith investigated by the Committee of the Relief Association and of the Medical Group, . . . In the event the explanation offered is not satisfactory, a board of arbitration shall be selected. . . . Such Board shall meet in arbitration without unnecessary delay and their decision shall be final.

In the judgment of the district court of appeal, second district, division 2, California, the arbitration provisions of the agreement do not apply to personal damage claims by individuals but only to methods and conditions of contact between the contracting parties and their individual members. The arbitration provisions contemplate only an inquiry into a grievance that has been first submitted to a joint committee for explanation, and malpractice is more than a grievance answerable by an explanation. The arbitration agreement did not deprive the trial court of jurisdiction.—*Spanach v. Superior Court of Los Angeles County (Calif.), 43 P. (2d) 339.*

Society Proceedings

COMING MEETINGS

American Association for the Study of Neoplastic Diseases, Baltimore, Dec. 19-21. Dr. Eugene R. Whitmore, 2139 Wyoming Avenue N.W., Washington, D. C., Secretary.

American Student Health Association, New York, Dec. 27-28. Dr. Harold S. Diehl, University of Minnesota Medical School, Minneapolis, Secretary.

Eastern Section, American Laryngological, Rhinological and Otological Society, Newark, N. J., Jan. 3. Dr. Henry B. Orton, 24 Commerce St., Newark, N. J., Chairman.

Middle Section, American Laryngological, Rhinological and Otological Society, Milwaukee, Jan. 11. Dr. William E. Grove, 324 East Wisconsin Avenue, Milwaukee, Chairman.

Mid-Western Section, American Laryngological, Rhinological and Otological Society, St. Louis, Jan. 15. Dr. Harry W. Lyman, Carleton Building, St. Louis, Chairman.

Puerto Rico, Medical Association of, Santurce, Dec. 13-15. Dr. Euripides Silva, Ave. Fernandez Juncos, Parada 19, Santurce, Secretary.

Society of American Bacteriologists, New York, Dec. 26-28. Dr. I. L. Baldwin, College of Agriculture, University of Wisconsin, Madison, Wis., Secretary.

Society of Surgeons of New Jersey, Jersey City, Jan. 15. Dr. Walter B. Mount, 21 Plymouth St., Montclair, Secretary.

Southern Section, American Laryngological, Rhinological and Otological Society, Jackson, Miss., Jan. 18. Dr. Robin Harris, Lamar Building, Jackson, Miss., Chairman.

Western Section, American Laryngological, Rhinological and Otological Society, Del Monte, Calif., Feb. 1-2. Dr. Carroll Smith, Paulsen Building, Spokane, Wash., Chairman.

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers to THE JOURNAL in continental United States and Canada for a period of three days. Periodicals are available from 1925 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested). Periodicals published by the American Medical Association are not available for lending but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American J. Obstetrics and Gynecology, St. Louis

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Contributions of Great Britain to Gynecology and Obstetrics. B. M. Anspach, Philadelphia.—p. 459.

Study of a New and Potent Ergot Derivative, Ergotocin. F. L. Adair, M. E. Davis, M. S. Kharasch and R. R. Legault, Chicago.—p. 466.

Theca Cell Tumors. S. H. Geist, New York.—p. 480.

Some Newer Aspects of Reproductive Physiology. E. Novak, Baltimore. —p. 495.

Experiences with Amniotin in Treatment of Gonococcic Vaginitis in Children. R. W. TeLinde and J. N. Brawner Jr., Baltimore.—p. 512.

*Protein Stabilization in Preeclampsia and Eclampsia. B. Harden, W. S. McElroy and R. R. Huggins, Pittsburgh.—p. 524.

*Treatment of Dysmenorrhea by Presacral Sympathectomy. F. E. Keene, Philadelphia.—p. 534.

Place of Colpectomy in Treatment of Uterine and Vaginal Prolapse. L. E. Phaneuf, Boston.—p. 544.

*Analysis of End Results of Labor in Primiparas After Spontaneous versus Prophylactic Methods of Delivery. A. H. Aldridge and P. Watson, New York.—p. 554.

Clinical and Bacteriologic Observations in Trichomonas Vaginitis. E. Allen, L. B. Jensen and I. H. Wood, Chicago.—p. 565.

Hypothyroidism as a Problem in Women: Basal Metabolism Study of Six Hundred Cases. C. H. Davis, Milwaukee.—p. 570.

Toxemia of Pregnancy. J. R. Goodall, Montreal.—p. 577.

*Ovary-Stimulating Factors and Antihormones. C. F. Fluhmann, San Francisco.—p. 584.

Recent Advances in Hysterography. T. O. Menees and J. D. Miller, Grand Rapids, Mich.—p. 590.

When Is Surgery Indicated in Retrodisplacement of Uterus? G. H. Gardner, Chicago.—p. 596.

Protein Stabilization in Eclampsia.—Harden and his associates studied the changes in the maternal constitution incident to so-called physiologic gestation, the clinical features of preeclampsia and eclampsia (with reference to the clinical use of an alcoholic extract of liver) and the application of protein stabilization as a measure of study of preeclampsia and eclampsia. The results of their study indicate that the most profound clinical alterations demonstrable in preeclampsia and eclampsia are in the field of protein metabolism: that this has a direct application in the final outcome is more than probable. Any plan of prevention and treatment must take into consideration such measures as will tend to maintain the protein of the mother within the limits of normal pregnancy.

Treatment of Dysmenorrhea by Presacral Sympathectomy.—Keene states that presacral sympathectomy for dysmenorrhea is limited in its usefulness to young women, and hence its value must be judged not only in terms of relieving pain but also by its effects on menstruation and pregnancy. The operation severs the chief sympathetic nerve supply to the bladder and rectum as well as the uterus, and a satisfactory result must include unimpaired function of these organs. His experience, and that of others reported, justify the belief that presacral sympathectomy has a place in the treatment of properly selected cases of functional dysmenorrhea, but its adoption is warranted only when less radical measures have failed. In organic dysmenorrhea, presacral sympathectomy may be used with advantage to supplement operations on the pelvic organs. Ordinarily the operation is not difficult, but conditions may be encountered rendering its performance tedious and hazardous. The operation relieves pain in the majority of cases and does not interfere with menstruation, spontaneous parturition or motor control of the bladder and rectum.

End Results of Labor in Primiparas.—Aldridge and Watson observed that the incidence of birth injuries to mothers and babies, and of postpartum complications, was in direct proportion to the incidence of prolonged labor, abnormal pelves, faulty presentation and large babies, which resulted in the application of increased pressure to the maternal soft parts and to the fetus during labor and delivery. Elective low forceps after perineal incision can justly be regarded as a prophylactic procedure in patients who would deliver spontaneously if allowed to do so. Perineal incision, when used in conjunction with any type of vaginal operative delivery, consistently reduced the incidence of birth injuries and postpartum complications. Prophylactic methods of delivery should be used by men trained both in obstetrics and in gynecology in hospitals properly equipped to give obstetric care. All women should have the protection of delivery in hospitals under supervision of men trained in gynecology and obstetrics.

Ovary-Stimulating Factors and Antihormones.—Fluhmann conducted experiments to study the occurrence of "antihormones" in the blood of experimental animals injected daily for a long period of time with gonadotropic extracts. The injection into rats of a preparation of human pituitary gland for ninety or 119 days resulted in the production of substances capable of inhibiting the action of gonadotropic extracts prepared from both human hypophyses and from blood of pregnant women. A species specificity was demonstrable, however, as it proved ineffective with sheep pituitary extracts. The administration to rabbits of a human pregnancy blood gonadotropic extract for seventy-four days resulted in the production of substances capable of inhibiting similar extracts, but it was ineffective against either human or sheep pituitary gland preparations. Antihormones in the blood of women during the first ten days of the puerperium could not be demonstrated.

American Journal of Orthopsychiatry, Menasha, Wis.

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Evaluation of Juvenile Courts and Clinics: Introduction to Theory of Evaluation. H. B. Elkind and M. Taylor, Boston.—p. 217.

Hyperactivity in Children Having Behavior Disorders. A. T. Childers, Cincinnati.—p. 227.

Children's Attitudes to Parents. H. Meltzer, St. Louis.—p. 244.

Heilpedagogical Station of Children's Clinic at the University of Vienna. J. J. Michaels, Boston.—p. 266.

Nicknames of Institutional Children. S. Z. Orgel and J. Tuckman, New York.—p. 276.

Psychometric Practice in Adults of Superior Intelligence. F. L. Wells and N. W. Hylan, Boston.—p. 286.

Biologic Method in Psychiatric Case Work. M. Harrington, Napanoch, N. Y.—p. 302.

Phobia of Impregnation and Its Relation to Psychoneuroses. T. R. Robie, Montclair, N. J.—p. 318.

Personality of King Lear as a Young Man. I. S. Wile, New York. —p. 325.

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Health Information on the Air. A. Blanchard, San Francisco.—p. 1081.

*Basophilic Aggregation Test in Lead Poisoning Epidemic of 1934-1935. C. P. McCord, F. R. Holden and J. Johnston, Cincinnati.—p. 1089.

Relationship Between Electrophoretic Migration Velocities, Virulence and Types of Diphtheria and Diphtheria-like Bacilli. K. P. Dozois and K. F. Rauss.—p. 1099.

Public Health Expenditures in Selected Cities by Nonofficial Agencies. J. Wallace and L. Feldman, New York.—p. 1103.

New Germany Teaches Her People: Account of Health Exposition of Berlin. H. E. Kleinschmidt, New York.—p. 1108.

Standardization of Methylene Blue Reduction Test by Use of Methylene Blue Thiocyanate. H. R. Thornton and R. B. Sandin, Edmonton, Alta.—p. 1114.

Campaign Against Tuberculosis in College Students. C. E. Shepard, Stanford University, Calif.—p. 1118.

An Experimental Critique of the Allen Method of Evaluating Bactericidal Action of Antiseptics. K. H. Lewis and L. F. Rettger, New Haven, Conn.—p. 1125.

Relative Toxicologic Effects of Synthetic Ethanol and Grain Fermentation Ethanol in Blended Whiskies. C. W. Muehlberger, Chicago. —p. 1132.

Aims of School Health Service. D. W. Gudakunst, Detroit.—p. 1135.

Basophilic Aggregation Test in Lead Poisoning.—McCord and his co-workers assert that in the 1934-1935 epidemic of lead poisoning in the automobile industry 6,900 basophilic aggregation examinations of the blood were made. In addition, during this period 1,100 tests were made in other industries. This number includes approximately 500 control examinations made on workers who were not exposed to lead. Positive basophilic aggregation tests have served as an index for lead absorption prior to the appearance of clinical manifestations of lead poisoning. This test has proved to be of value in

the diagnosis of early cases of lead poisoning. The procedure is suited to application by any physician or laboratory carrying out any blood examinations. The basic principle in the basophilic aggregation test is the enumeration of red blood cells containing basophilic substance, in contrast to the customary procedure of qualitative or quantitative examination for stipple or polychromatophilic cells. The native state of basophilic material in unaltered red blood cells is not known, but in the process of laking and staining red cells this substance may be artificially aggregated into readily visible masses. In normal human adults, these aggregates rarely exceed 1 per cent of the total number of erythrocytes, but in persons exposed to lead the percentages ordinarily lie above this normal maximum, when considerable lead is being absorbed or when clinical lead poisoning is imminent. Finding more than from 1 to 1.5 per cent and especially more than 2 per cent in persons exposed to lead at once suggests lead absorption and the possibility of approaching lead poisoning, or the actuality of early lead poisoning. In chronic lead poisoning this test usually is not, but may be, positive. As lead poisoning progresses to extended chronicity, the reliability of the procedure diminishes. The test has been utilized in industries using lead to determine the number of exposed workers absorbing lead, as some proof of existing lead hazards, as a guide for the transfer of workers absorbing lead to lead-free departments, as a measure of the efficacy of preventive devices and practices and as a means for the detection of malingerers. There are varied types of diseases leading to positive basophilic aggregation tests, but in groups of workers in lead industries, presumably normal except for the possible effects of lead exposures, the positive basophilic aggregation test stands in some relation to lead absorption and its subsequent action.

American Review of Tuberculosis, New York

32: 343-480 (Oct.) 1935

Comparison of Roentgenologic and Pathologic Findings in Experimental Pulmonary Tuberculosis in Rabbits: Part I. Primary Tuberculosis. H. E. Burke, Ray Brook, N. Y.—p. 343.
Id.: Part II. Reinfection Tuberculosis. H. E. Burke, Ray Brook, N. Y.—p. 382.
Atypical Acid-Fast Micro-Organisms: III. Chromogenic Acid-Fast Bacilli from Human Beings. M. Pinner, Tucson, Ariz.—p. 424.
Id.: IV. Smooth-Growing Tubercle Bacilli. M. Pinner, Tucson, Ariz. —p. 440.
*Spore-Bearing Anaerobic Bacterial Flora of Tuberculous Cavities. F. C. Faragó, Budapest, Hungary.—p. 446.
*Presence of Bacillus Welchii in Tuberculous Cavities. F. C. Faragó, Budapest, Hungary.—p. 452.
Serologic Study Emphasizing Hydrogen Ion Concentration of Blood in Conjunction with Red Cell Sedimentation Test, Leukocytic Index and Complement Fixation Test. K. T. Sasano, Mount McGregor, N. Y. —p. 458.
Biologic Effects of Beryllium. R. N. Loomis and E. Bogen, Olive View, Calif.—p. 475.

Bacillus Welchii in Tuberculous Cavities.—Faragó obtained positive cultures of Bacillus Welchii from 100 per cent of tuberculous cavities bacteriologically studied within a few hours of death. Other species of pathogenic and nonpathogenic anaerobes were isolated in a smaller percentage of cases. Of the Bacillus Welchii strains cultivated from cavities, 42 per cent proved to be pathogenic. Sputum from tuberculous patients also gave positive results in 10 per cent of the cases. The author believes that the isolation of Bacillus Welchii from a definite though small percentage of sputum from tuberculous cavities lends support to the view that their presence in the cavities at necropsy is not due to dissemination of the organisms after death. While there can be little doubt that conditions suitable for the growth of anaerobic organisms exist in these cavities, the path of invasion by anaerobic bacilli is problematic. Spirochetes have been found in bronchiectatic cavities; but these organisms are present in the pharynx, whereas Branham and Levinthal failed to discover any anaerobic bacilli in the mouth, nose or pharynx. The question of whether these organisms exert any harmful effect on the host is difficult to answer. The fact that in a certain number of cavity cases there was evidence of the formation of antibodies against the hemotoxin and the toxin of Bacillus Welchii would suggest that the products of the organism are absorbed from the cavity, but whether in sufficient amount to affect the health of the patient or to retard the process of healing it is impossible for the author to say at present.

Annals of Internal Medicine, Lancaster, Pa.

9: 359-500 (Oct.) 1935

Further Studies on Thymus and Pineal Glands. L. G. Rowntree, J. H. Clark, A. Steinberg, A. M. Hanson, N. H. Einhorn and W. A. Shannon, Philadelphia.—p. 359.
*Artificial Pneumothorax in Treatment of Lobar Pneumonia. B. Burbank and E. Rothstein, Brooklyn.—p. 376.
*Immunologic Applications of Placental Extracts: Effectiveness by Oral Administration. C. F. McKhann, A. A. Green, L. E. Eckles and J. A. V. Davies, Boston.—p. 388.
*Fever Therapy in Gonorrheal Arthritis and Chorea. T. G. Schnabel and F. Fetter, Philadelphia.—p. 398.
Dermatomyositis: Report of Case with Review of Literature. I. H. Marcus and J. Weinstein, Brooklyn.—p. 406.
*Fatal Diabetic Coma with Acute Renal Failure. M. E. Holmes, Syracuse, N. Y.—p. 426.
Incidence and Significance of Roentgenologic Niche in Duodenal Ulcer. B. R. Kirklin and H. A. Burch, Rochester, Minn.—p. 436.
Personality and the Endocrines: Study Based on Fourteen Hundred Quantitative Necropsies. W. Freeman, Washington, D. C.—p. 444.
The Relationship of the Flat Chest to Intelligence. S. A. Weisman, Minneapolis.—p. 451.
Acute Lymphatic Leukemia in a Child of Four Years with Severe Granulopenic Phase Preceding a Remission. L. B. Flinn, Wilmington, Del.—p. 458.

Artificial Pneumothorax in Treatment of Lobar Pneumonia.—Burbank and Rothstein treated twenty cases of lobar pneumonia by artificial pneumothorax, with a resulting mortality of 10 per cent. Of their cases, at the onset of treatment, nine had consolidation of the left lower lobe, four of the right lower lobe, two of the right lower and middle lobes, two of the entire right lung and one each of the right upper lobe, of the right middle and upper lobes, and of both lobes of the left lung. With reference to age, the principal factor to be considered is the function of the lungs, as affected by the presence of emphysema and chronic bronchitis. These pulmonary conditions increase with increasing age. The authors have arbitrarily set 60 years as the upper limit, paying less attention to the chronological age than to the presence of diminished breath sounds, fixed barrel chest, numerous rhonchi and a past history of dyspnea on slight exertion. No patients should be treated unless acutely ill; otherwise the percentage of recoveries will be increased falsely. Patients who are febrile past the sixth day are not suitable for treatment while pneumothorax is still in the experimental phase, as many such patients in whom no complications exist will recover. Patients presenting small effusions probably do not offer any contraindications, but until the percentage of empyemas with pneumothorax treatment is established it would be wise not to treat them by this method. None of the authors' patients experienced any immediate pain, shock or discomfort. Relief of pain was permanent, usually after 500 cc. Relief after the first treatment occurred in ten cases, after the second treatment in six more, and four had no pain at any time. There were not immediate complications. Of the twenty patients, two developed empyema. Both were operated on (rib resection and open thoracotomy) and are gradually recovering. Both cases were due to Streptococcus haemolyticus. Absorption takes from two to three weeks. Delirium developed in five cases; in three it required restraint. Delirium tremens developed in one case of chronic alcoholism. This patient died. Three patients developed contralateral lobar pneumonia; one of these died. The beneficial effects of pneumothorax are apparently related only to the relief of pleural irritation. There is practically no collapse as seen on the roentgenogram of the involved lobe and no noticeable effect on toxicity, nor is it reasonable to assume a diminution of blood or lymph drainage from the involved areas. The rationale of the therapeutic effect appears to the authors to be as follows: Respiration becomes free, painless and of increased depth. This lessens the exertions of the patient, the cyanosis and anoxemia, and the chance of contralateral diminished aeration with atelectasis and secondary pneumonic involvement. Relief from pain allows the patient to rest comfortably; sleep is made possible without the use of opiates. Coughing is made almost painless. Productive coughing ensures proper drainage from the diseased area. None of the patients developed abdominal distention. A large part in the development of this troublesome symptom may be played by diaphragmatic pleurisy. Roentgen studies showed air between the lung and the diaphragm in almost all cases, and

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the relief thus afforded at this point is, the authors feel, directly connected with the absence of distention.

Immunologic Applications of Placental Extracts.—McKhann and his associates review studies to determine the practicability of immunologic application of placental extracts, particularly in the prevention and modification of measles, and report investigations which indicate that the immune bodies of placental extracts may be effective following oral administration. Tests have been made largely by determination of immunity to scarlet fever as measured by the Dick test. Twenty-two children with positive tests have been rendered Dick negative by oral administration of extract in cold water on an empty stomach. The duration of the negative stage has been variable but has been prolonged to as much as eighteen days if iced alkaline carbonated water is used as the vehicle. The reversal of the Dick test could not be obtained with any regularity in adults. Oral administration of the extract has not been accompanied by reactions.

Fever Therapy in Gonorrheal Arthritis and Chorea.—Schnabel and Fetter induced fever by circulating humidified hot air in the Kettering hypertherm in treating nine acute and nine chronic cases of gonorrheal arthritis and twelve cases of Sydenham's chorea. Of the nine patients with acute gonorrheal arthritis, six were cured, two were markedly improved and one was moderately improved. Of the nine with chronic gonorrheal arthritis, five were cured, three markedly improved and one moderately improved. Nine patients with chorea were cured and two were markedly improved. One died as a result of a disturbance of his heat regulating mechanism. No patient having either of these diseases failed to respond favorably to this form of treatment. It is believed that fever therapy offers the best chance of cure for both gonorrheal arthritis and chorea.

Fatal Diabetic Coma with Acute Renal Failure.—Holmes presents five cases of fatal diabetic coma, all with blood nonprotein nitrogen retention of more than 100 mg. per hundred cubic centimeters, observed in the past five years. All cases fell properly in the class of diabetic acidosis as judged by the usual clinical and laboratory criteria: excessive hyperglycemia, reduction of the alkali reserve of the plasma, glycosuria and ketonuria. The principal features of the cases were the failure of the acidosis, as exemplified by the plasma carbon dioxide combining power, to clear in response to insulin therapy, and the development of evidence of renal insufficiency. All patients seemed to respond favorably to treatment at first and all revived for a brief period a few hours after treatment was begun, only to lapse back into a fatal stupor and finally die in apparent uremia. Oliguria was noted in all cases, and anuria, for from six to twenty-two hours, in four individuals. Casts and red and white blood cells were present in the urine of all patients. Albuminuria, although slight at first, increased as the coma progressed. The nonprotein nitrogen of the blood, while not markedly elevated early, gradually mounted in each case until before death it exceeded 100 mg. per hundred cubic centimeters; in one case it exceeded 300 mg. per hundred cubic centimeters on the eighth day. Edema was noted in three instances toward the end, and convulsions (hypoglycemia not present) developed in one patient. While moderate amounts of acetone were present in the urine in all cases, diacetic acid was absent in one and present only in small amounts in the urine of the other four. The increase in the blood nonprotein nitrogen is probably not entirely an index of failure of kidney function, since concentration of the chemical constituents including urea is brought about by dehydration always present in severe diabetic coma. However, in the series, the grade of nitrogen retention was much greater than that reported as a result of dehydration, and the retention occurred late after the anhydremia had apparently been overcome by the administration of large amounts of fluids. The presence of oliguria, anuria, albumin, casts and red blood cells in the urine, edema, and in one patient convulsions, can leave little doubt that the severe azotemia in these cases was due to direct retention as a result of acute functional renal failure. Several factors have been suggested as being concerned in the development of this type of renal failure: shock, dehydration, disturbance of the plasma electrolytes, increased destruction of endogenous protein, insulin and pathologic change in the kidney. Most of these factors are probably interrelated.

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Annals of Medical History, New York

7: 409-502 (Sept.) 1935

A French Epidemiologist of the Sixteenth Century. E. W. Goodall, London, England.—p. 409.
Galen's Writings and Influences Inspiring Them. J. Walsh, Philadelphia.—p. 428.
Roziere de la Chassagne and the Early History of Percussion of the Thorax. G. Dock, Pasadena, Calif.—p. 438.
History of Development of the Technic of Herniotomy. E. Andrews, Chicago.—p. 451.
Sir Thomas Browne and the Disease Called the Morgellons. C. E. Kellett, Newcastle-on-Tyne, England.—p. 467.
Early Medical Magazines in America. H. B. Shafer, Great Neck, L. I., N. Y.—p. 480.
Therapy in Gonorrhea: Historical Review. H. L. Wehrbein, Brooklyn.—p. 492.

Annals of Otol., Rhinol. and Laryngology, St. Louis

44: 305-608 (June) 1935. Partial Index

Intramucosal Test for Hypersensitivity in Allergic Rhinitis. L. W. Dean, L. D. Linton and C. S. Linton, St Louis.—p. 317.
Indications for Bondy Type of Modified Radical Mastoid Operation. H. I. Lillie, Rochester, Minn.—p. 337.
Review of the Interrelationship of Paranasal Sinus Disease and Certain Chest Conditions, with Especial Consideration of Bronchiectasis and Asthma. J. G. McLaurin, Dallas, Texas.—p. 344.
Syndrome of Pain and Paralysis Arising from Inflammations of Prevertebral Space. A. W. Proetz, St. Louis.—p. 371.
*Ménière's Symptom Complex: Endolymph Decompression with Symptomatic Improvement: Report of Case. S. N. Parkinson, Oakland, Calif.—p. 382.
Impermeable Cicatricial Stricture of Esophagus Treated by Modification of Iglauer Technic. H. J. Moersch, Rochester, Minn.—p. 407.
Confusing Symptoms in Acoustic Nerve Tumors. C. T. Uren and B. C. Russum, Omaha.—p. 442.
Selective Treatment of Malignancy About the Head. T. C. Galloway, Evanston, Ill.—p. 450.
Pathways of Approach to Petrous Pyramid. M. F. Jones, New York.—p. 458.
Method to Determine Percentage of Deafness in Malingerers. F. W. Dixon, Cleveland.—p. 483.
Clinical Relationship of Infections in Upper Respiratory Tract to Certain Types of Chronic Uveitis: Preliminary Report. W. D. Gill, San Antonio, Texas.—p. 486.
New Surgical Approach to Mediastinum Through Pyriform Sinus. S. E. Roberts, Kansas City, Mo.—p. 493.

Ménière's Syndrome and Endolymph Decompression with Improvement.—Parkinson reports a case of so-called Ménière's syndrome and suggests the descriptive term recurrent aural crisis. Endolymph decompression, as described by Portmann, was performed on the involved side. The effect was promptly and favorably to modify the course of symptoms sufficient to rehabilitate the patient. Continued deterioration in auditory and vestibular function indicates that the disease process has not been terminated in spite of symptomatic relief. The relation of endolymph decompression to the symptomatic course of this disease may be significant in studies aimed at etiology and pathology. It seems consistent with Furstenburg's work on salt retention. It suggests that the endolymph is concerned in the pathology and in the production of the characteristic attacks.

Archives of Ophthalmology, Chicago

14: 527-698 (Oct.) 1935

Detachment of Choroid After Cataract Extraction: Clinical and Experimental Studies, with Report of Seventy-Five Cases. C. S. O'Brien, Iowa City.—p. 527.
Light Stimuli of Minimal Measured Duration as Means of Perimetry. L. L. Mayer, Chicago.—p. 541.
Use of Coley's Mixed Toxins in Ophthalmology: Further Observations. J. Levine, New York.—p. 554.
Closure of Angle of Anterior Chamber in Glaucoma: Its Bearing on Operations for Relief of Hypertension. M. U. Troncoso, New York.—p. 557.
*Corneal Ulcers Due to Common Allergen. S. J. Parlato, Buffalo.—p. 587.
Dilated and Tortuous Retinal Vessels: Report of Case of Congenital Arteriovenous Communication. D. Kravitz and R. I. Lloyd, Brooklyn.—p. 591.
Circulation of the Aqueous: IV. Reabsorption of Colloids. J. S. Friedenwald and H. F. Pierce, Baltimore.—p. 599.
Acute Metastatic Syphilitic Corneal Abscess: Clinical and Histopathologic Study. Bertha A. Klien, Chicago.—p. 612.
Empirical Treatment of Uveitis. F. H. Newton, Dallas, Texas.—p. 618.

Corneal Ulcers Due to Common Allergen.—Parlato presents a case of corneal ulcers, the cause of which was traced to a hypersensitiveness to orris root. Specific treatments were given, and for the past two years there has been no recurrence

of the ulcers. The accompanying disease of the lids and the rest of the conjunctiva have disappeared. Evidence is submitted to show that ethylmorphine hydrochloride is contraindicated in the palliative treatment of corneal ulcers. An allergic study of other cases of corneal ulcers will elicit the basic etiologic factors and thus increase the percentage of successful treatments. The timely recognition of hypersensitiveness in many cases of chronic conjunctivitis in which the condition proves refractory to the usual forms of treatment may help to prevent the formation of corneal ulcers and the subsequent impairment of vision.

Archives of Pathology, Chicago

20: 507-664 (Oct.) 1935

*Gross and Histologic Changes in Knee Joint in Rheumatoid Arthritis. F. Parker Jr. and C. S. Keefer, Boston.—p. 507.
*Diffuse Cortical Contusion of Occipital Lobe. C. B. Courville, Los Angeles.—p. 523.
Lipids in Liver of Cat During Bile Stasis and Biliary Decompression. A. Cantarow, H. L. Stewart and M. M. Lieber, Philadelphia.—p. 535.
Renal Denervation: Effect of Daily Injections of Colon Bacilli and Pitressin on Denervated Kidney of Dog. G. Milles, Chicago, and M. Hardgrove, Milwaukee.—p. 548.
Mechanism of Acute Inflammation. V. H. Moon, Philadelphia.—p. 561.
Late Changes in Liver Induced by Mechanical Obstruction of Hepatic Veins. J. P. Simonds and F. H. Jergesen, Chicago.—p. 571.

Changes in Knee Joint in Rheumatoid Arthritis.—Parker and Keefer compared the lesions of three cases of rheumatoid arthritis with those of degenerative and infectious arthritis. They obtained necropsies in two of the cases; the process was in a comparatively early stage in one and was far advanced in the other. The early case occurred in a person who died from cinchophen poisoning. They observed that destruction of the articulating cartilage takes place by solution and by dedifferentiation of cartilage into connective tissue once its surface has been covered with connective tissue. It is replaced with cancellous bone by a process of ossification from the periphery. The destruction of cartilage by connective tissue growing into the cartilage from the subchondral spaces is minimal and not a fundamental pathologic process in the disease. It is seen when new bone formation goes on in such areas. From their observations the authors state that the fundamental process in rheumatoid arthritis is an inflammatory process in the periarticular tissues and synovial membrane. The other anatomic changes are secondary to this essential change; that is to say, the destruction of cartilage, the atrophy of bone and new bone formation. A part of the process can be explained on the basis of disuse of a joint together with the loss of cartilage that occurs following the connective tissue overgrowth. Any theory that attempts to explain the pathogenesis of rheumatoid arthritis must take into account the mechanism by which the changes in the periarticular tissues come into being. The lesions in the cartilage, which are so distinctive of degenerative arthritis, are quite different from those resulting from destruction of the cartilage by overgrowth of connective tissue. The theory that degenerative and rheumatoid arthritis result from the same underlying factors is untenable.

Diffuse Cortical Contusion of Occipital Lobe.—Courville bases his discussion of diffuse cortical contusions of the occipital lobe, which are relatively uncommon, on eight cases in which necropsies were performed. With the exception of those due to depressed fractures, they assume certain characteristics which are of interest in the study of traumatic intracranial lesions. Diffuse contusion of the occipital lobe, characterized by a diffuse reddish coloration and softening of the affected cortex without gross morphologic disorganization, results from two types of mechanical disturbance: The lesion may be primary and acute, resulting from forcing of the occipital cortex against the falx or tentorium when the head in motion strikes some relatively immovable object. The force of the blow is expended on the sides or top of the head. Although in the primary type the contusion of the brain is usually found on the same side as that of the injury to the scalp, it occurs on the opposite side of the occipital lobe and is therefore a contrecoup. The secondary type is the result of local pressure by an expanding lesion, such as edema or subdural or intracerebral hemorrhage. In this type there is no necessary relationship between the side of the original injury and that of the contusion. In any case the lesion is essentially a diffuse hemorrhagic softening of the cortex resulting from a rupture of small cortical veins incident to the sudden reversal of current in these vessels in the primary type, or to persistent and increasing obstruction by continued pressure in the secondary type. Microscopically, the cortical and subcortical tissues are found to be infiltrated with blood. The softening and disintegrating tissues are ultimately filled with compound granular corpuscles. The appearance of the ultimate lesion is unknown, since no example has as yet been studied.

Arkansas Medical Society Journal, Fort Smith

32: 79-92 (Oct.) 1935

Cicatricial Stricture of Esophagus. L. H. Landry, New Orleans.—p. 79.
Review of Four Hundred and Forty-Four Cases of Breast Lesions. M. J. Kilbury, Little Rock.—p. 83.

Colorado Medicine, Denver

32: 761-864 (Oct.) 1935

Hold Tight Where You Are: Presidential Address. W. W. King, Denver.—p. 773.
Practical Method for Control of Dangerous Infections in Oral Surgery. J. W. Seybold, Denver.—p. 778.

Delaware State Medical Journal, Wilmington

7: 203-218 (Oct.) 1935

Medical Ethics: Then and Now. J. D. Niles, Townsend.—p. 203.
The Nasal Accessory Sinuses: From the Standpoint of the General Practitioner. E. R. Mayerberg, Wilmington.—p. 206.
Plea for Prolonged Postnatal Care and Periodic Pelvic Examination of the Adult Female. C. L. Hudiburg, Wilmington.—p. 210.

Endocrinology, Los Angeles

19: 509-632 (Sept.-Oct.) 1935

Conditions Necessary for Continuous Growth of Hypophysectomized Animals. H. M. Evans, R. I. Pencharz and Miriam E. Simpson, Berkeley, Calif.—p. 509.
*Paget's Disease (Osteitis Deformans). R. C. Moehlig and J. M. Murphy, Detroit.—p. 515.
Silhouette Method for Comparing Volumes of the Two Parts of the Adrenal Glands in Small Animals. J. C. Donaldson, Pittsburgh.—p. 523.
*Relationship Between Parathyroid Glands and Sex Hormones in Tetany. E. P. McCullagh and J. E. Kearns Jr., Cleveland.—p. 532.
Studies on Effect of Human Blood Serum on Growth of Rat. E. K. Shelton, L. A. Cavanaugh and M. Louisa Long, Santa Barbara, Calif.—p. 543.
Hypoglycemic Headache. P. A. Gray and H. I. Burtness, Santa Barbara, Calif.—p. 549.
*Mental Retardation Associated with Endocrine and Nonendocrine Conditions. M. B. Gordon and L. Kuskin, with technical assistance of B. Berkowitz, Brooklyn.—p. 561.
*Organotherapy in Mental Retardation Associated with Endocrine and Nonendocrine Conditions. M. B. Gordon, L. Kuskin and J. Avin, Brooklyn.—p. 572.
Interpretation of Lowered Basal Metabolic Level. D. L. Sexton, St. Louis.—p. 579.
Effect of Pitocin, Pitressin and Antuitrin on Fat Tolerance Tests. H. Blotner, Boston.—p. 587.
Significance of Different Types of Cells of Anterior Pituitary. W. Susman, Manchester, England.—p. 592.
Relation of Lipids to Estrin and Progestin in Corpus Luteum of Sow. E. M. Boyd and C. A. Elden, Rochester, N. Y.—p. 599.

Paget's Disease (Osteitis Deformans).—Moehlig and Murphy observed that in twelve cases of Paget's disease five gave a family history of diabetes mellitus. In two cases more than one member of the family had diabetes, and in one of these both parents died of diabetes and a brother, still living, is so afflicted. It was noted that a sister in this family had had a parathyroidectomy for generalized osteoporosis. There was at least one member in each of the families of the twelve patients who was 70 inches (178 cm.) or more in height. There were five different patients in whose families the weight of one or more members exceeded 200 pounds (91 Kg.). Two of the subjects with Paget's disease had leiomyomas. The authors suggest that the function of the pituitary gland is involved primarily in the production of the disease process and that the function of the parathyroid is involved secondarily. From a practical therapeutic standpoint the first consideration would be one of constitutional prophylaxis, that is, a eugenic one in that the tall, obese individuals, especially those with a familial diabetic history, should not intermarry. In view of the fact that there is a familial diabetic history and the patients have a low

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carbohydrate tolerance, victims of Paget's disease should be treated as diabetic, with weighed diet and insulin.

Parathyroids and Sex Hormones in Tetany.—The sex glands have a pronounced effect on the neuromuscular excitability in human parathyroid tetany. McCullagh and Kearns did not find variations in amounts of sex hormones in the body to be correlated with alterations in the levels of serum calcium and phosphorus, and it appears probable that they affect neuromuscular excitability through a separate mechanism. The application of radiation therapy to the ovaries is suggested as a possible means of controlling some of the aggravating factors in tetany in selected cases.

Mental Retardation.—Gordon and Kuskin studied 666 mentally retarded children, of whom 266 showed signs of endocrine disorder. Mental retardation occurred with the greatest frequency in association with (in the order named) childhood myxedema, hypothyroidism, pituitary obesity (adiposogenital dystrophy and thyropituitary type), anterior pituitary deficiency of growth and goiter. Mentally retarded infants with endocrine conditions were found to cut teeth, walk and talk at a later date than mentally normal infants in the same endocrine groups. Practically all children with childhood myxedema in this series were mentally retarded and showed delay in all developmental fields. There was found a greater tendency for mental retardation associated with childhood myxedema and hypothyroidism to appear in the first two years of life. Mental retardation in association with pituitary disturbances appeared to a greater extent after the second year of life. A concomitant appearance of mental retardation and endocrine dyscrasia was found to the greatest extent in childhood myxedema, to a lesser degree in hypothyroidism and to the least extent in pituitary conditions. It appeared that mental retardation occurs more frequently after an acute illness in association with pituitary disturbance and hypothyroidism than with childhood myxedema. A history of trauma is present only in the pituitary group and in not a single instance in the thyroid class in this series. Congenital syphilis played an insignificant part in the production of endocrine disorder (5.5 per cent). The incidence of congenital syphilis was only 8 per cent in the nonendocrine group of mental retardation. Every child with mental retardation should be studied from a comprehensive endocrine point of view.

Organotherapy in Mental Retardation.—Gordon and his associates treated 155 mentally retarded children who showed endocrine dyscrasia and 162 children showing nonendocrine mental retardation. The treatment consisted of organotherapy (desiccated thyroid and pituitary gland), remedial measures of associated disabilities such as chronic diseases, proper diet, educational measures and improvement of social conditions. Diet, improvement in social conditions and elimination of physical disabilities had no effect on the mental status in any child. The change in mentality was due, then, to the action of organotherapy or of the educational measures. The part played by the latter is great, but, since practically all children of school age, especially those in the lower intelligence quotient classes, had the benefit of an educational program, it must be concluded that any beneficial results are to be attributed to the effects of glandular preparations. A tendency to continued improvement was observed in 45 per cent of the endocrine group and in 1.2 per cent of the nonendocrine group. Fair or temporary results were obtained in 34 per cent of the endocrine and in 34.6 per cent of the nonendocrine group. A tendency to continued improvement following the administration of desiccated thyroid and pituitary glands was observed only in cases of mental retardation associated with endocrine disorder. The highest incidence was noted in anterior pituitary deficiency, childhood myxedema, hypothyroidism and pituitary obesity, in the order named. Better results (58 per cent) were obtained in thyroid disturbances than in the hypopituitary group (30 per cent).

Florida Medical Association Journal, Jacksonville

22: 141-188 (Oct.) 1935

Discussion of a Group of Common Skin Diseases. C. A. Andrews, Tampa.—p. 155.
Osteochondritis Deformans Juvenilis Coxae. J. H. Branan, Pensacola. —p. 160.
Treatment of Eclampsia. C. B. Wright, St. Petersburg.—p. 164.
Some Surgical Errors. C. D. Christ, Orlando.—p. 166.

Illinois Medical Journal, Chicago

68: 293-384 (Oct.) 1935

Meningococcic Meningitis: Importance of Intravenous Therapy. A. L. Hoyne, Chicago.—p. 307.
Pneumoconiosis. W. D. McNally, Chicago.—p. 311.
Fractures of Transverse Processes of Lumbar Vertebrae. R. T. Pettit, Ottawa.—p. 318.
Treatment of Vertebral Fracture with Secondary Paralysis. E. Hauser, Chicago.—p. 320.
Medical Problems of Today and the Future. O. West, Chicago.—p. 322.
Complications of Diabetes Mellitus. C. J. McMullen, Chicago.—p. 327.
Team Work in Head Cancer. T. C. Galloway, Evanston.—p. 331.
*Tubercle Bacilli on Lips of Patients with Active Pulmonary Tuberculosis. L. Gulbrandsen and R. Keller, Chicago.—p. 336.
Exposure to Cold as Factor in Etiology of Lobar Pneumonia. A. J. Nedzel, Chicago.—p. 340.
Importance of Intradermic Reactions. C. A. Earle, Des Plaines.—p. 345.
Simplified Technic of Abdominal Supravaginal Hysterectomy. E. Jonas, Chicago.—p. 347.
*Use of Prostheses over Unsightly Eyes. C. O. Schneider, Chicago. —p. 349.
The School Teacher as Source of Tuberculosis Infection: Report of X-Ray Study. D. O. N. Lindberg, Decatur.—p. 350.
Short Wave Therapy in Acute Inflammations About the Head and Neck. M. H. Cottle, Chicago.—p. 354.
Can Medicine Solve Its Own Problems? B. C. Crowell, Chicago.—p. 358.
The Poor Gallbladder Risk. E. S. Murphy, Dixon.—p. 363.
Is Medical Relief a Forerunner of State Medicine? B. C. Roloff, Chicago.—p. 367.
Diet in Diseases of Skin. F. R. Schmidt, Chicago.—p. 376.

Tubercle Bacilli on Lips of Patients.—Gulbrandsen and Keller show that viable tubercle bacilli reside on the lips of patients with open pulmonary tuberculosis. Tubercle bacilli exposed on the surface of the body in this way have abundant opportunity to be transferred from the lips to the hands and fingers, or from the lips to whatever utensil or article comes into contact with them. As a result, persons working or living in an environment of tuberculosis have as much possibility of becoming infected with the tubercle bacillus through actual contact as one would of becoming infected with other types of bacteria from typhoid or diphtheria carriers. Opie and McPherson found that when roentgen examinations were used for the recognition of pulmonary lesions, husbands and wives in marital contact with tuberculosis under varying conditions were infected from five to nine times as often as persons with no known contact with the disease. Evarts, Potter and Dunn followed the children of 136 families into adult life. At least one parent in each family was known to have had tuberculosis. Among 554 children of these families, the tuberculosis mortality in offspring between the ages of 15 and 39 years was two and three times as high as among the general population of the same class of people. Meyers, Diehl and Lees pointed out that 39 per cent of nurses in training, in a tuberculosis service of thirty beds, presented positive reactions on entrance, whereas three years later, on graduation, 100 per cent had positive tuberculin reactions. Apparently, tubercle bacilli are being disseminated along avenues that are not encompassed by present methods of tuberculosis control; that is, prevention of droplet infection. As more is understood in regard to this disease, these measures must be supplemented by closer attention to existing sources of infection. The patient with tubercle bacilli in his sputum must be looked on as a "carrier" of tubercle bacilli with the same public health status as a carrier of typhoid or diphtheria. Consequently, if measures are to be taken to prevent dissemination of tubercle bacilli exposed on a body surface in this way, these measures must be concentrated on the patient. The authors' recommendations consist of instructing the patient with regard to personal hygiene. Along with the proper disposal of sputum, he should be taught that tubercle bacilli reside constantly on his lips, and therefore any object that comes in contact with these structures, such as fingers, hands, tableware of any type and towels, have an opportunity of becoming contaminated with tubercle bacilli. Adequate facilities should be provided for washing the hands and lips at frequent intervals, in order to maintain the self-disinfecting power of the skin at its highest activity at all times. All the principles of medical asepsis as practiced in regard to other infectious and communicable diseases should be instituted in the care of tuberculous patients. Tubercle bacilli found on the lips of patients having open pulmonary tuberculosis can survive for periods of one hour and forty minutes and still be viable.

Use of Prostheses over Unsightly Eyes.—In a case in which enucleation was considered, Schneider recommended the wearing of a very thin contact glasslike prosthesis over the injured eye. The patient has been wearing the thin prosthesis continuously and with perfect comfort and satisfaction. This experience leads the author to believe that (1) enucleation for an unsightly but comfortable eye may not be indicated, (2) an artificial eye can be made thin enough to be worn successfully over an unshrunken globe, (3) a patient can soon wear such a prosthesis with comfort, and (4) the mobility of the prosthesis, when riding over a natural globe with normal musculature, is certain to be much better than when the prosthesis is resting on any sort of stump.

Journal of Infectious Diseases, Chicago

57: 129-222 (Sept.-Oct.) 1935

Phenomenon of Local Skin Reactivity to Bacterial Filtrates in Relation to Rous Chicken Sarcoma Antibodies. G. Shwartzman, New York.—p. 129.

Survival of Virus of Infectious Laryngotracheitis in Bursa of Fabricius and Cloaca of Chickens After "Intrabursal" Injection. J. R. Beach, Berkeley, Calif.—p. 133.

Scarlet Fever Immunization of Nurses. G. W. Anderson and W. I. Reinhardt, Boston.—p. 136.

Bacillus Siamensis, Pathogenic Variety of Bacillus Subtilis. L. Siribaed, National Health Laboratories, Siam, Asia.—p. 143.

Benzidine Blood Agar (Penfold) for Isolating Streptococcus Scarlatinae. Ruth Tunnicliff, Chicago.—p. 147.

Survival of Tubercle Bacilli Subjected to Vacuum of High Order. T. S. Potter, Chicago.—p. 149.

Bacterial Fermentations and Structure of Glucosamine. A. G. Wedum and A. W. Walker, Chicago.—p. 160.

*Scarlet Fever Toxin: I. Method of Purification and Concentration. G. F. Dick and A. K. Boor, Chicago.—p. 164.

Resistance of Vitamin B_1 and B_2 Deficient and Normal Rats to Intracerebral Injection of Herpes Virus. E. V. Cowdry, A. M. Lucas and C. F. Neff, St. Louis.—p. 174.

Chemical Separation and Biologic Activity of Polysaccharide Constituent in Brucella Cells. A. D. Hershey, I. F. Huddleson and R. B. Pennell, Lansing, Mich.—p. 183.

*Study of Variation in Corynebacterium Diphtheriae. Gladys L. Hobby, New York.—p. 186.

Some Studies of Infectious Laryngotracheitis: Continued Propagation of Virus on Chorio-Allantoic Membrane of the Hen's Egg. C. A. Brandly, Manhattan, Kan.—p. 201.

Reversible Inactivation of Bacteriophage with Safranin. A. P. Krueger and D. M. Baldwin, Berkeley, Calif.—p. 207.

Pathogenicity of Brucella Abortus for White Mice. W. H. Feldman and C. Olson Jr., Rochester, Minn.—p. 212.

Scarlet Fever Toxin.—Dick and Boor show the advantages of a purified and concentrated toxin for skin test and immunologic purposes and for a study of the chemical and physical properties of this substance. They have prepared a purified and concentrated scarlatinal toxin containing 20,000,000 or more skin test doses per gram and of low nitrogen content by a combination of fractional precipitation with ammonium sulfate, treatment with an aluminum hydroxide preparation, dialysis and evaporation.

Variation in Corynebacterium Diphtheriae.—Hobby studied the morphologic and colonial variation in Corynebacterium diphtheriae and observed the relation of bacteriophage to this variation. Working with a particular strain, which has been designated RB-2T, variation in both liquid and solid mediums has been investigated. A spontaneous variation leading to a change from the rod to the coccoid form, and the reverse, has been observed. Mucoid, smooth, rough and minute colonies of the rod form of this strain and mucoid and smooth colonies of the coccoid form have been isolated. A rough type, consisting of filamentous, branching rods, has been derived from the smooth phase of the coccoid form. A transformation from the smooth phase of the coccoid form to the smooth phase of the rod form may occur through the intermediate stage of the rough phase derived from the coccoid form. Single cell cultures of the coccoid form in the mucoid and smooth phases have been shown to be completely susceptible to the action of races of bacteriophage isolated (1) from the intestinal contents of typical cases of diphtheria, (2) from the intestinal contents and peritoneal washings of guinea-pigs infected with diphtheria bacilli and (3) from broth cultures that have stood at room temperature for from four to six weeks. Single cell cultures of the rod form in the mucoid, smooth and rough phases are completely resistant to the bacteriophage. Eight races of bacteriophage, isolated under anaerobic conditions from lysogenic variants of the smooth type of the rod form, are active against the coccoid form in the mucoid and smooth phases but not against any other forms of this strain. No correlation between virulence and toxigenicity has been observed. Results show that the virulence of the rod form is increased by the presence of bacteriophage, which is active in vitro only against the coccoid form. The ability of the coccoid form to produce toxin has been shown for the first time, thus indicating a fundamental relation between this form and the characteristic rod form.

Journal of Nutrition, Philadelphia

10: 351-460 (Oct. 10) 1935

Spectrum Analysis of Hen Eggs and Chick Tissues. W. F. Drea, Colorado Springs, Colo.—p. 351.

Basal Heat Production of Rhesus Monkey (Macaca Mulatta). N. Rakieten, New Haven, Conn.—p. 357.

Effects of Increasing Calcium Content of Diet in Which Calcium Is One of Limiting Factors. H. C. Sherman and H. L. Campbell, New York.—p. 363.

Calcium and Phosphorus Needs of Preschool Children. Amy L. Daniels, Mary K. Hutton, Elizabeth M. Knott, Olive E. Wright and Mary Forman, Iowa City.—p. 373.

Effect of Deficient Diets on Total Ash, Calcium and Phosphorus Content of Bones. Ruth Yeager and J. C. Winters, Austin, Texas.—p. 389.

Augmentation of Toxicity of Fluorosis in the Chick by Feeding Desiccated Thyroid. P. H. Phillips, Honora English and E. B. Hart, Madison, Wis.—p. 399.

Minimal Vitamin A Requirements, with Particular Reference to Cattle. H. R. Guilbert and G. H. Hart, Davis, Calif.—p. 409.

Is Work of Kidney, Due to the Excretion of Urea, a Factor in Specific Dynamic Action? A. G. Eaton, Shirley C. Cordill and J. L. Gouaux, New Orleans.—p. 429.

Effect of Male Hormone on Protein and Energy Metabolism of Castrate Dogs. C. D. Kochakian and J. R. Murlin, Rochester, N. Y.—p. 437.

Kansas Medical Society Journal, Topeka

36: 397-440 (Oct.) 1935

Experimental Surgery of Kidney. O. S. Lowsley, New York.—p. 397.

Statistical Study of Osteomyelitis at the University of Kansas Hospital. J. B. Weaver, Kansas City.—p. 402.

Common Disorders of Large Bowel. P. W. Morgan, Emporia.—p. 406.

Practical Hints in Prenatal Examinations. R. B. Schutz, Kansas City, Mo.—p. 410.

*Primary Spindle Cell Sarcoma Associated with Primary Scirrhous Carcinoma. W. C. Curphey, Kansas City.—p. 412.

Primary Sarcoma Associated with Primary Carcinoma.—Curphey discusses a case of two malignant tumors occurring simultaneously in the same breast, which he considers belong in the group of separate primary malignant growths, principally because of the existing anatomic arrangement. In the light of Russell's experimental work it is possible that the carcinoma might have had sarcoma propagating properties similar to mouse tumor 100. This is unlikely in the present instance because the metastatic carcinoma in the liver had no associated sarcomatous growth; there was no tendency for the sarcoma to overgrow the carcinoma, a phenomena that occurred almost invariably in Russell's mouse tumor. That the carcinoma might have been secondary to the sarcoma is also plausible according to the observations of Nicholson. In other words, either of the two tumors might have stimulated the growth of the other or both might be entirely independent and caused by the same ultimate factor that is responsible for all malignant growth.

Maine Medical Journal, Portland

26: 151-164 (Oct.) 1935

The Rôle of the Pituitary Gland. C. B. Popplestone, Rockland.—p. 157.

Pulmonary Tuberculosis Presenting Thoracic Surgical Problems: Case. Edited by J. Gottlieb and C. Steele, Lewiston.—p. 158.

Military Surgeon, Washington, D. C.

77: 177-238 (Oct.) 1935

Wound Ballistics: Studies in Mechanism of Wound Production by Rifle Bullets. G. R. Callender and R. W. French.—p. 177.

Disposal of Excreta in Civilian Conservation Corps Camps. H. C. Michie.—p. 202.

Malignancy and Tuberculosis. P. B. Matz.—p. 207.

Duodenal Ulcer Treated with Larostidin: Report of Two Cases. B. N. Ahl.—p. 216.

Practical Value of Nicloux Test for Ethyl Alcohol in Defining Intoxication for Purpose of Determining Line of Duty. E. F. Curtis.—p. 219.

Prevention of Venereal Disease. F. J. Vokoun.—p. 221.

Army Medical Personnel Early in the Nineteenth Century. G. F. Lull. p. 223.

New England Journal of Medicine, Boston

213: 699-740 (Oct. 10) 1935

Lesions of Cervix Uteri: Diagnosis and Treatment. C. H. Davis, Milwaukee.—p. 699.
Changes in Maternal Mortality and Their Significance. C. E. Mongan, Somerville, Mass.—p. 705.
Resection of the Presacral Nerve in Gynecology. F. A. Pemberton, Boston.—p. 710.
*Observations on Symptomatology of Cholelithiasis, with Especial Reference to Vomiting. R. Zollinger, Boston, and E. Young, Cleveland. —p. 714.
Further Case Studies of Lumbosacral Pathology with Consideration of Involvement of Intervertebral Disks and Articular Facets. C. E. Ayres, Worcester, Mass.—p. 716.
Trichobezoar. A. Hurwitz, Boston.—p. 721.

Symptoms of Cholelithiasis.—Zollinger and Young distended the gallbladder or common duct in six patients. Under a short gas-oxygen anesthesia or local infiltration of procaine hydrochloride the stones were removed from the gallbladder or common duct, and a sterile balloon was inserted which could be distended and the pressure recorded. When the patient had recovered sufficiently from the anesthesia to answer all questions intelligently, the gallbladder or common duct was distended. Distention of the gallbladder produced a feeling of indigestion or deep epigastric discomfort without the usual pain referred to the back or discomfort in the right hypochondrium. Nausea and vomiting did not occur, regardless of the degree of distension. Distention of the common duct produced a more severe epigastric distress, but again pain was not referred to the back. Inspiratory distress was characteristic of distension of either viscus. The chief difference between distention of the gallbladder and of the common duct was the occurrence of nausea and vomiting with the latter. The significance of these observations was then determined from a study of the clinical histories of 100 cases of cholelithiasis and chronic cholecystitis with a negative history for jaundice, 100 cases of acute cholecystitis and 100 cases of proved stone of the common duct. The authors' observations, which showed that vomiting followed distention of the common duct, were in accord clinically in that distention of the biliary ducts, as by a calculus, produced a high percentage of involuntary vomiting as compared with calculi within the gallbladder. They believe that a calculus in the cystic or common duct in patients having pronounced involuntary vomiting should be considered in the group of indications for exploration of the common duct.

New Jersey Medical Society Journal, Trenton

32: 565-624 (Oct.) 1935

Physiologic Rest of Nose: Unrecognized Factor in Treatment of Upper Respiratory Infections. E. L. Wood, Newark.—p. 571.
Evolution or Revolution in Medical Methods. A. C. Christie, Washington, D. C.—p. 576.
The Washington, D. C., Medical-Dental Service Bureau: The Medical Economic Project of Physicians and Dentists of the District of Columbia. R. Garrett, Washington, D. C.—p. 577.
Treatment of Backache from Orthopedic Standpoint. A. J. Davidson and M. T. Horwitz, Philadelphia.—p. 580.
The Painful Back: Clinical Examination and Diagnosis. A. M. Rechtman, Philadelphia.—p. 582.
Mistaking Other Diseases for Coronary Thrombosis. J. B. Herrick, Chicago.—p. 590.
*Coronary Disease and Coronary Thrombosis in Youth: Analysis of Four Cases Under the Age of Thirty Years, Twenty-One Cases Under the Age of Forty Years and One Hundred and Thirty-Eight Cases Under the Age of Fifty Years. P. D. White, Boston.—p. 596.
Treatment of Certain Vascular Complications in Diabetes Mellitus. A. A. Epstein, New York.—p. 606.

Coronary Disease in Youth.—White states that the male sex is overwhelmingly the victim of coronary disease in early life. The young patients of his series all used considerable tobacco. The question of ancestral longevity and inheritance is undoubtedly important. His data give some support to the widely held notion that it is of fundamental importance to inherit long lived ancestors. Two points of some interest concerning the young patients with coronary disease are that they live city lives and have not exercised consistently. Infections do not seem to play much of a part in the production of serious coronary disease nor does diet, although further study may show that, as in diabetes, it is the combination of faulty metabolism with faulty diet that is important. The author has collected the data in cases of coronary thrombosis and of uncomplicated angina pectoris occurring in patients less than 40 years of age, examined in the last fifteen years, for comparison with his total series of cases of coronary thrombosis and of angina pectoris at all ages. He compares certain features about these cases and others in children less than 5 years of age with similar features concerning a group of very old persons, ranging in age from 80 to 105 years and for the most part in good health. In the latter he found that he could use the data that Pearl has been collecting somewhat in the same way concerning nonagenarians and centenarians.

New Orleans Medical and Surgical Journal

88: 203-264 (Oct.) 1935

Rôle of Uterine Cervix in Focal Infections. H. W. Kostmayer, New Orleans.—p. 203.
*Etiology of Functional Puberty Bleeding and Its Treatment by Hormone Therapy. J. T. Witherspoon and C. G. Collins, New Orleans.—p. 205.
Prevention and Control of Amebiasis. C. F. Craig, New Orleans.—p. 209.
The Phobia of High Blood Pressure. C. L. Eshleman, New Orleans.—p. 219.
Importance of Ear, Nose and Throat in Their Relationship to Focal Infection. G. J. Taquino, New Orleans.—p. 225.
Conservative Treatment of Diseases of Ear, Nose and Throat. J. R. Hume, New Orleans.—p. 229.

Functional Puberty Bleeding and Its Treatment by Endocrine Therapy.—When no pathologic condition of the pelvis, as elicited by bimanual examination, could account for bleeding in young girls, Witherspoon and Collins instituted endocrine therapy before any curettage was performed. The technic of the treatment consisted in the daily administration to the bleeding patient of 1 cc. of a preparation of the anterior pituitary-like gonadotropic principle from the urine of pregnant women, alone or in combination with 2 cc. of a commercial preparation containing the anterior pituitary growth factor. These injections are given intramuscularly and are continued until the bleeding stops. Assuming this cessation of flow to be the end of a menstrual period, no further therapy is given until the onset of the next period. With the onset of flow, daily injections are again given until the flow of the second period ceases. In like manner treatment is carried through a third period. After treatment for three months, no treatment is administered during the fourth period, in the hope that the menstrual rhythm has reestablished itself. If such is not the case, treatment should be carried on a while longer. In the authors' experience three periods of treatment were usually sufficient to reestablish the normal menstrual rhythm. About equal results were obtained whether the gonadotropic principle was used alone or in combination with the growth principle. The only untoward symptoms noted were an occasional local reaction at the site of the injections. This could be somewhat alleviated by decreasing the dosage given, starting with smaller doses or by diluting the amount of the injection with an equal volume of physiologic solution of sodium chloride or a 0.5 per cent solution of procaine hydrochloride. That actual conversion of the hyperplastic endometrium over into the secretory, premenstrual phase did not always occur is readily attested in several cases by the rapid cessation of flow, within from twelve to twenty-four hours, after the injections. The most likely explanation would seem to be that the effect is exerted on some unknown bleeding factor, which possibly is similar in nature and function to the principle that controls the cessation of the normal menstrual flow.

Philippine Islands Med. Association Journal, Manila

15: 459-514 (Sept.) 1935

Staphylococcus Bacteriophage: I. Susceptibility of Sixty-Four Philippine Strains of Staphylococci to Four Races of Imported Polyvalent Staphylococcus Bacteriophage. A. Pio de Roda, Manila.—p. 459.
*Agranulocytosis Following Quinine Administration: Report of Case. W. Vitug, A. Chavez and G. F. Austria, Manila.—p. 464.
Watermelon Seed in Air Passages: Report of Cases. V. C. Alcantara and G. de Ocampo, Manila.—p. 469.
Some Facts on Malaria. P. I. de Jesus, Manila.—p. 476.
Infant Mortality in the Philippines: Its Present Status and the General Death Rate. F. Z. Cruz, Manila.—p. 479.

Agranulocytosis Following Quinine Administration.—Vitug and his associates point out that some patients who take quinine often complain of marked body weakness, besides the usual auditory disturbance. It is probable that the granulocytic mechanism of such patients is adversely affected by the

drug. Their patient received no drug other than quinine bisulfate. While the patient was taking the drug her temperature (which had been normal) rose suddenly on the fifth day and remained at 40 C. (104 F.) for several days. Following the mere suspension of quinine, the fever dropped to 37.8 C. (100 F.). The authors are inclined to interpret this fact as evidence that the drug acted as a bone marrow depressant, with special stress on the myelocytic center. Discontinuance of the drug allowed granulopoiesis to proceed normally and thus contributed to the lowering of the temperature. The prompt increase of the granular leukocytes following a blood transfusion coinciding with a further drop of the temperature to the normal level seems to substantiate the hypothesis of Roberts and Kracke that one of the functions of the granulocytes may be to aid in heat control. The slight but progressive fall in the total leukocyte and polymorphonuclear counts noted on the readministration of quinine to the patient at a reduced dosage after she had recovered from her leukopenic crisis is to the authors positive proof that they are dealing with a quinine-induced agranulocytosis.

Public Health Reports, Washington, D. C.

50: 1401-1440 (Oct. 11) 1935

Nonflammable Pyrethrum Spray for Use in Airplanes. C. L. Williams and W. C. Dreessen.—p. 1401.

*Age Incidence of Specific Causes of Illness: Based on Records for Nine Thousand Families in Eighteen States Visited Periodically for Twelve Months, 1928-1931. S. D. Collins.—p. 1404.

50: 1441-1484 (Oct. 18) 1935

Bacteriologic Examinations of Oysters and Water from Narragansett Bay During the Winter and Spring of 1927-1928. L. M. Fisher and J. E. Acker.—p. 1449.

Age Incidence of Causes of Illness.—Collins presents the results of periodic canvasses of 8,758 white families living in 130 localities in eighteen states and including 39,185 individuals. Each family was visited at intervals of from two to four months for a period long enough to obtain a sickness record for one year. On the first call a record was made of the number of members of the household, together with data about sex, age, marital status and communicable disease history of each person. On succeeding visits the canvasser recorded all illness that had occurred since the preceding call, with such pertinent facts about each case as the date of onset, the duration of disability and of confinement to bed, the nature of such medical service as was obtained, and the termination of the illness. The surveyed families include representation from nearly all geographic sections, from rural, urban and metropolitan areas and from all income classes, and consist of both native born and foreign born persons. The proportions of these various elements included are not identical with those in the population of the United States, but the variations are not generally large. In other respects also the surveyed group is not dissimilar to families in the general white population of the United States. The age incidence of all the specific diseases that were reported in sufficient numbers to approximate a reasonably accurate age curve are depicted in graphs and tables. While there are irregular chance variations in many of the curves, they serve to indicate the general picture of the age incidence of even the less frequent diagnoses.

Texas State Journal of Medicine, Fort Worth

31: 365-426 (Oct.) 1935

Tumors of Mouth and Jaws. W. M. Reppeto, Dallas.—p. 370.

Some Congenital Anomalies of Oral Cavity. B. Shelmire, Dallas.—p. 375.

Thrombocytopenic Purpura. T. C. Terrell, Fort Worth.—p. 380.

Trend of Modern Obstetrics. C. T. Collins, Waco.—p. 383.

Early Diagnosis of Tuberculosis as Public Health Problem. J. Potts, Fort Worth.—p. 387.

Treatment of Tuberculosis in the Home. R. B. Homan Jr., El Paso.—p. 389.

Sanatorium Treatment of Tuberculosis. R. S. Norris, Sanatorium.—p. 392.

Tuberculosis Control Program in Texas. J. W. Brown, Austin.—p. 395.

Prevention of Tuberculosis. Z. T. Scott, Austin.—p. 395.

Phrenic Nerve Resection as an Adjunct to Artificial Pneumothorax. W. D. Anderson, San Angelo.—p. 398.

Electrotherapeutic Measures in Benign and Malignant Skin Diseases. E. C. Fox, Dallas.—p. 402.

X-Ray in Diagnosis of Childhood Tuberculosis. R. B. Homan Sr., R. H. Homan and R. B. Homan Jr., El Paso.—p. 406.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

Archives of Disease in Childhood, London

10: 337-396 (Oct.) 1935

*Urinary Disorders Occurring in Neonatal Period. W. S. Craig.—p. 337.

Blood Counts of New-Born Infants in Relation to Icterus Neonatorum. L. C. Martin and S. M. Evans.—p. 355.

*Recurrent Swelling of Parotid Glands. R. S. B. Pearson.—p. 363.

Further Study of Antirachitic Factors in Human Milk. I. A. Sabri and M. M. Fikri.—p. 377.

Inquiry into Value of Autohemotherapy in Juvenile Asthma. K. Maddox and R. F. Back.—p. 381.

*Ketogenic Diet in Persistent Pyuria. Pearl Summerfeldt, Marion M. Johnston and Mildred J. Kaake.—p. 389.

Urinary Disorders in Neonatal Period.—Craig describes the abnormal microscopic and bacteriologic observations in the urine of sixty-one new-born children with urinary disorders and gives details of the clinical signs and symptoms. The urinary observations are compared with those in a series of healthy new-born children. The abnormalities present in the urine were varied. Organisms were present in every case and pus was present in large amount in fifty-three cases: excessive deposits of uric acid and urates were noted in twenty cases, in five of which there was no pyuria. A characteristic clinical picture is found in association with urinary conditions in the new-born. Onset of the illness is usually indefinite: prolonged anuria, especially when accompanied by fever or occasional vomiting, is suggestive of a commencing urinary condition and justifies immediate diuretic treatment. Later, restlessness, thirst and sweating develop and color changes are characteristic of the illness at its height. Collapse occasionally occurs and high fever is common, but in a few cases the course is afebrile. Convulsions are of grave significance. Symptoms are closely related to the excretory activity of the kidneys, and treatment should be directed toward the promotion and maintenance of adequate diuresis. This is best attained by the giving of fluids at frequent intervals and the administration of alkalis and weak tea. A follow-up of children after their discharge from the hospital showed that recovery is complete, remissions rarely occur and the subsequent general health of the children is not impaired. Urinary infection in the neonatal period occasionally occurs either as a complication of intracranial birth injury or in association with severe alimentary disturbance. In fatal cases, pathologic changes are slight: they are most often found in the substance of the kidney and rarely involve the pelvis of the organ.

Recurrent Swelling of Parotid Glands.—Pearson cites eleven cases of recurrent swelling of the parotid gland characterized by the absence of infection and by the frequent history of allergy. In three cases, allergic manifestations frequently coincided with the development of the swellings. In one of these the passage of plugs containing large numbers of eosinophils from the parotid duct is described. It is suggested that these swellings may be allergic in nature. The possible mechanism of the swellings is discussed and obstruction of the ducts is thought to play a prominent part. Infection may in some cases be superimposed on an allergic basis.

Ketogenic Diet in Persistent Pyuria.—Summerfeldt and her associates state that to compare the ketogenic diet with the surgical treatment of persistent pyuria is difficult, as the principle of surgical treatment is to relieve the obstruction to allow free drainage and to reduce the pressure atrophy on the kidney, aiming at some restoration of kidney tissue if no further obstruction occurs. With this treatment these children usually do well, but in seven cases in which cultures of the urine were taken for from eight months to four years after the relief of the obstruction, micro-organisms were still found to be present. With the ketogenic diet and the production of sterile urine it can well be argued that kidney infection is eliminated, but just how rapidly or to what extent the hydronephrosis will progress is not known. This will have to be controlled with further intravenous pyelography and cystoscopic examinations. That this form of treatment is not always effective is shown by the fact that 21 per cent did not become bacteria free, though one case was not under observation long enough for a fair trial.

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In 14 per cent there was a recurrence of the pyuria in six months and eight months and in the remaining 65 per cent of cases the results are good. Surgical treatment of chronic pyelitis serves merely to relieve the anatomic irregularity with the idea that the establishment of adequate drainage will remove the focus of infection. No bactericidal principle is provided to hasten the return of proper healthy function. The ketogenic diet does not correct anatomic anomalies but does provide the bactericidal agent. From a study of the two types of treatment it would appear that a combination is to be recommended to obtain the best results.

British Medical Journal, London

2: 651-710 (Oct. 12) 1935

Psychoses of Adolescence. W. S. Dawson.—p. 651.
Remote Results of Puerperal Sepsis. E. Maclean.—p. 656.
Treatment of Tuberculous Empyema. M. P. Susman.—p. 659.
*Observations on Infection by Plasmodium Knowlesi (Ape Malaria) in Treatment of General Paralysis of Insane. C. E. van Rooyen and G. R. Pile.—p. 662.

2: 711-770 (Oct. 19) 1935

Readjustments in Medical Study: Medical Curriculum. G. Newman.—p. 711.
Tropical Medicine: Introductory Address. G. C. Low.—p. 715.
Intussusception. P. L. Hipsley.—p. 717.
Induction of Labor. L. G. Higgins.—p. 721.
Artificial Pyrexia in Epilepsy: Note. F. L. McLaughlin.—p. 724.

Plasmodium Knowlesi in Treatment of Dementia Paralytica.—In order to overcome certain difficulties associated with the induction of benign tertian malaria for the treatment of dementia paralytica, van Rooyen and Pile employed the naturally occurring ape malaria parasite Plasmodium Knowlesi, which they have successfully transmitted to twelve human subjects. They investigated the practical applicability of substituting this type of parasite for Plasmodium vivax in the treatment of dementia paralytica and present two cases that illustrate the application of this form of infection in the treatment of the disease. Clinical notes concerning the course of ape malaria occurring in man, the action of certain antimalarial remedies on this type of infection and various experimental data are also discussed. The work has been carried out with a strain of parasite originally obtained from the Malaria Survey of India, supplied by Rickard Christophers of London.

Glasgow Medical Journal

6: 177-224 (Oct.) 1935

Alveolar and Diffuse Carcinoma of Prostate Gland Simulating Carcinosarcoma. D. F. Cappell.—p. 177.
Prognosis in Nephritis. J. N. Cruickshank.—p. 184.
Certain Observations on Treatment of Cervical Metastases in Cancer of Mouth. R. G. Hutchison.—p. 198.

Journal of Tropical Medicine and Hygiene, London

38: 237-248 (Oct. 1) 1935

The Reticulocyte Response in Mice, Rats, Guinea-Pigs and Monkeys Infected with Treponema Duttoni, Trypanosoma Gambiense and Plasmodium Knowlesi. A. Robertson.—p. 237.
Bronchomycosis Due to Monilia Tropicalis: Case. A. Castellani and T. Standring.—p. 244.

Lancet, London

2: 811-868 (Oct. 12) 1935

Attitude of Surgery to Hematemesis. G. Gordon-Taylor.—p. 811.
*Outbreak of Scabies in Mental Hospital. F. E. Kingston.—p. 815.
Anesthesia by Closed Method. T. A. B. Harris.—p. 817.
Treatment of Colles's Fracture. E. A. Devenish.—p. 821.
Congenital Atresia of Duodenum in a Child Aged Thirteen Months. T. G. D. Bonar.—p. 822.

Scabies in a Mental Hospital.—Kingston discusses and stresses the inadequacy of sulfur ointment in the treatment of scabies. In view of the dogmatic optimism to be found in textbooks of dermatology with regard to the treatment of scabies by sulfur ointment, he emphasizes the following of the recorded observations: Of ten certain cases of scabies in mental patients, not one was cured by two courses of sulfur ointment treatment. A total of thirty-three courses of treatment resulted in five cures and five failures. At room temperature an adult female sarcoptes will survive complete embedding in sulfur ointment for twenty-four hours. At room temperature the eggs will survive and continue to develop for four days in sulfur ointment, and it does not prevent the larvae from hatching out. On the other hand, sulfur ointment is more lethal for the sarcoptes than petrolatum, killing the parasite in half the time. A 2 per cent solution of sulfurated potash in water is markedly toxic for the parasite but loses its potency if allowed to become neutralized by the carbon dioxide of the atmosphere. This fact prevented any satisfactory experiment with the reagent at the strength of the sulfurated potash bath as usually prescribed (i. e., about 1:1,500). The author experimented with sulfur, turpentine and paraffin and found it to be disappointing clinically. Apparently potent when applied directly to the parasite at a concentration that caused little or no irritation to the skin, it frequently failed to cure the patient even when given as rather liberal applications on three successive days. On the other hand, for a certain type of patient it is undoubtedly superior to sulfur ointment. The treatment may be repeated the following week without ill effect, and this course is probably advisable in any well established case. The preparation is simple and cheap, and the opening up of burrows, although doubtless of benefit, is not an essential factor in the treatment.

Medical Journal of Australia, Sydney

2: 397-428 (Sept. 28) 1935

*Comparison of Basal Metabolic Rates Obtained by Gasometric Analysis and Formulas. T. J. F. Frank.—p. 397.
Some Notes and Comments on Surgical Records of the Brisbane Hospital During Last Quarter of Century. E. S. Meyers.—p. 405.
Convergence Accommodation and Pupil Contraction. G. Phillips.—p. 412.

Basal Metabolic Rates Obtained by Gasometric Analysis and Formulas.—Frank made a comparison of basal metabolic rates by indirect calorimetry (Douglas bag and Haldane gas analysis), and by Read's, modified Read's and Gales' formulas in 250 patients. There is a large margin of inaccuracy in the determinations by the formulas. In only approximately one fifth of the cases was there an error of less than 5 per cent, while in more than 30 per cent of the cases there was an error of more than 20 per cent. Frequently when low basal metabolic rates were obtained by gas analysis the formula gave higher readings. The reverse occurred in hyperthyroidism, and here lower readings were observed frequently. The formula might find some practical value as a method in difficulties if its limitations are recognized. Possibly it might be used to follow up patients with hyperthyroidism who are under treatment, provided the initial value of the gasometric result is known. Even here its results are not conclusively diagnostic. The percentage and margin of error by the formulas are too great and incalculable. It does not allow a sufficiently certain estimation, especially in important and difficult cases. Therefore the author feels justified in issuing a warning against making a final diagnosis from the use of formulas alone. Deviations of gasometric basal metabolism from the normal alone are insufficient proof of an endocrine upset and are not to be used diagnostically except in association with the total clinical picture. The gasometric analysis for determination of the basal metabolic rate cannot be supplemented or replaced by formulas.

Journal of Oriental Medicine, Dairen, South Manchuria

23: 21-36 (Sept.) 1935

Renal Arteries in the Chinese. K. Miyashita.—p. 21.
Nasal Septum in the Chinese. N. Toida.—p. 23.
Study on the Form of Calcaneum and Olecranon: Pain in the Heel. G. Irie.—p. 25.
Influence of Injection of Placental Extract on General Growth and Development of Various Organs in New-Born Rabbits. Y. Matsuura.—p. 27.
Influence of Grape Sugar and Ismolysin on Ethersulphuric Acid Excretion in Urine of Rabbits Subjected to Morphine Injections. K. Maeda.—p. 28.
Studies on Bacterial Catalase, Especially Catalase of Dysentery Bacillus. S. Fukuda.—p. 29.
Etiology of Congenital Hemolytic Jaundice. Y. Saito.—p. 30.
Studies on Trichomonas Vaginalis Donné: Cultivation of Trichomonas Vaginalis. K. Matsuda.—p. 31.
Feer's Disease: Case. Y. Morita.—p. 32.
Parapsoriasis: Case. T. Akiyama.—p. 33.
Studies on Vital Staining of Bacteria: I. Influence of Pigment on Growth of Tubercle Bacilli and Nonpathogenic Acid-Fast Bacilli Cultivated in Kirchner's Medium to Which Ajinomoto Was Added. K. Fukumoto.—p. 34.
Id.: II. Pigment Affinity of Tubercle Bacilli and Nonpathogenic Acid-Fast Bacilli. K. Fukumoto.—p. 35.
Cysticerus Cellulosae Hominis: Case. T. Matsuura.—p. 36.

Presse Médicale, Paris

43: 1505-1520 (Sept. 28) 1935

*Laryngeal Crises and Certain Vasomotor Crises of Head. J.-A. Chavany and S. Daum.—p. 1505.

Vasomotor Crises in Tabes.—Chavany and Daum describe three cases of laryngeal crisis occurring in tabes dorsalis. They say that the light form is a simple spasm without dyspnea, properly speaking, but with immediate congestion of the face. The lesser form involves true dyspnea with a suffocating spasm. The dominating element is the contracture of the constrictors of the larynx. The vasomotor signs appear secondary to the asphyxial state. In the severe form there is sudden congestion of the face followed by pallor, usually with loss of consciousness, convulsions and sometimes sudden death. The mechanism of these attacks is poorly understood. The abruptness of onset suggests a reflex mechanism, but the excitant is unknown. The neurovegetative explanation accords with some of the clinical phenomena. Thus it accounts for the disproportion between excitant and intensity and severity of the responses encountered. The condition occurs frequently in tabes, and it is known that neurovegetative disturbances are common in this disease. The evidence, therefore, though not conclusive is highly suggestive.

43: 1537-1560 (Oct. 5) 1935

*Cavitation Form of Dilatation of Bronchi. F. Bezançon, R. Azoulay and A. Martin.—p. 1537.
*Vomitings from Air Swallowing in Nursling. P. Lereboullet, M. Lelong and P. Aimé.—p. 1541.
Tonus and Passive Retraction of Heart. R. Lutembacher.—p. 1546.
*Treatment of Pulmonary Abscess by Intravenous Injections of Alcohol. R. Simon and E. Magrou.—p. 1551.
Cytotoxic Action of Certain Metals on Human Osteoblasts Cultivated "in Vitro." G. Menegaux and D. Odiette.—p. 1555.
Treatment of Pulmonary Tuberculosis: Anterolateral Thoracoplasty of Monaldi. E. Berthet.—p. 1558.

Cavitation Form of Bronchiectasis.—Bezançon and his co-workers describe three personally observed cases and one case reported elsewhere of large solitary bronchiectatic cavities surrounded by normal lung tissue. The actual existence of the cavity and its bronchiectatic nature were verified in one case by necropsy. In another case, stereoscopic roentgenograms showed the connection of the cavity with the bronchus and the existence of associated ampullary dilatations. In the other two, intrabronchial iodized poppy-seed oil confirmed the diagnosis. Clinically the condition shares the general symptomatology of bronchiectasis. In no instance was there any previous pulmonary or bronchial history before the sudden onset of serious hemoptysis accompanied by abundant expectoration. The microscopic appearances of these cavities are similar to those found in general bronchial dilatations.

Emesis in Infants Due to Air Swallowing.—Lereboullet and his associates studied the vomitings that occur in infants from swallowing air. Roentgenologic examination has allowed several obscure points to be elucidated. The physiologic action of the pharynx in allowing much more air to be swallowed with liquids than with solids or semisolids is the principal factor. The mode in which air acts is apparently by creating the intragastric pressure necessary to provoke gastric contraction. The rapidity of the distention plays an important part in producing this condition, which is thus shown to be physiologic rather than pathologic. Three measures of treatment are given. The process may be avoided by direct introduction, by means of a tube, of the liquid food into the stomach, thus avoiding the function of the pharynx. Increase in the consistency of the food does much to decrease the amount of air swallowed. Finally, taking the left lateral decubitus position immediately after eating favors the pyloric evacuation of the intragastric air and decreases the gastric distention.

Treatment of Pulmonary Abscess.—Simon and Magrou report four cases of nonpurulent pulmonary abscesses treated by means of intravenous injections of alcohol by the Landau method. This consisted in the daily injection of 10 cc. of a 20 per cent solution of alcohol intravenously. The amount and percentage strength of the solution were sometimes increased later. Serial roentgenograms were made. In two of the patients one could speak of recovery; in the other two marked improvement resulted. The mechanism of action is still uncertain, but they conclude that this method of treatment may be attempted with a high degree of success, without serious complications, and may be continued without fear when improvement has begun to be noticed.

Schweizerische medizinische Wochenschrift, Basel

65: 1021-1040 (Oct. 26) 1935. Partial Index

Biology of Toxicomanias. H. W. Maier.—p. 1021.
*Blood Transfusions in Chronic Inflammatory Skin Disorders. H. Kuske.—p. 1025.
Osteochondromatosis of Knee Joint: Case. E. Ducrey.—p. 1026.
Use of Hypnotics in Psychotherapy. J. J. López Ibor.—p. 1029.

Blood Transfusions in Chronic Skin Disorders.—Kuske describes the history of a patient with a generalized arsphenamine exanthem in whom, after all other methods of treatment had failed, a blood transfusion was tried. The first transfusion of 350 cc. of blood resulted in a considerable improvement of the general condition. A second transfusion resulted in further betterment, so that the local treatment of the skin could be discontinued. Blood transfusions proved effective in three other cases of arsphenamine dermatitis. The author cites a case of generalized seborrheal eczema in which the usual therapeutic armamentarium had been exhausted. A single transfusion of 200 cc. of citrated blood was soon followed by a great improvement. The author employs the following technic of transfusion: He withdraws from 200 to 300 cc. of blood from the donor, mixes it in a ratio of 10:1 with a 3.5 per cent solution of sodium citrate, adds to this approximately 100 cc. of physiologic solution of sodium chloride, and then transfuses it slowly.

Riforma Medica, Naples

51: 1383-1420 (Sept. 14) 1935

Alimentation According to Individual Constitution. N. Pende.—p. 1383.
Carcinoma of Breast in Man: Cases. E. Palumbo.—p. 1386.
*Diagnostic Importance of Dry Preparations of Organic Fluids. P. De Gara.—p. 1393.

Diagnostic Use of Dry Preparations of Organic Fluids.—De Gara examined eighty specimens, both normal and pathologic, of cerebrospinal fluid, of gastric juice and of pleural and ascitic exudates by the test reported by Henning and collaborators (*Klin. Wchnschr.* **13**:251 [Feb. 17] 1934; abstr. THE JOURNAL, April 28, 1934, p. 1445). The test consists in the microscopic examination of the dried drop of the organic fluid for certain observations made in the original technic. The author states that the test can be used advantageously for detection of albumin, which, when present, becomes manifest in the marginal ring zone, the extension of which is proportional to the content of albumin in the fluid. The drop on the slide, treated by Milton's test in these cases, gives positive results. The technic of Henning's test is simpler than that of other tests for detection of albumin, while the results of the former agree with those of the latter. As the dry preparations are hygroscopic, they can be kept indefinitely in closed containers with calcium chloride.

Semana Médica, Buenos Aires

42: 969-1044 (Oct. 3) 1935. Partial Index

Early Tuberculous Infiltration: Evolution and Treatment. F. Etcheverry Boneo and L. R. Valle.—p. 969.
Bronchopulmonary Moniliasis. F. C. Tucci, J. E. Mosquera and A. Toce.—p. 983.
Sedimentation Speed of Erythrocytes in Cutaneous Carbuncle: Its Prognostic Value. R. Consigliere.—p. 989.
*Treatment of Burns by Vitamins and Camphor in Oil. C. O. Franzetti.—p. 998.

Treatment of Burns by Vitamins and Camphor in Oil.—In treating severe and infected burns, Franzetti reports satisfactory results from a combined internal and local treatment that consists in the administration of daily doses of from 20 to 30 drops of a solution of vitamins A and D, prepared at a concentration of 12,000 vitamin units each per cubic centimeter of the solvent, and the application of camphor in oil (at a 7 per cent concentration) dressings over the entire burned area. The local infection, general intoxication, edemas, vomiting, fever, tachycardia and albuminuria that complicate large, deep seated and infected burns rapidly diminished until complete disappearance. The renal functions rapidly become normal and the local results, especially those related to the formation of scars, are gratifying. The author has treated several cases with success.

Archiv für Gynäkologie, Berlin

159: 429-584 (Sept. 14) 1935. Partial Index

Genesis of Congenital Skin Defects. L. Brings.—p. 449.
Ovarian Hormones and Carbohydrate Metabolism: Ovarian Hormones and Blood Sugar Content. E. de Amilibia, M. M. Mendizábal and J. Botella-Llusiá.—p. 453.
Growth of Sarcoma in Cervical Stump Following Supravaginal Amputation of Uterus on Account of Myoma. R. Reckmann.—p. 478.
*Formation of Hydrosalpinx as Late Result After Sterilization Operation: Crushing and Ligation of Tubes. T. Koller.—p. 485.
Late Injuries of Kidney Following Toxicosis and Influence of Later Pregnancies on Residual Conditions of Renal Gestosis. G. Effkemann.—p. 493.
*Postpartum Aspects in Case of Plural Births and Similarity Diagnosis. F. Steiner.—p. 509.
*Increase in Blood Pressure, Indication of Incretory Disturbance in Myoma. E. Strassmann and R. Philipp.—p. 537.

Hydrosalpinx After Sterilization.—Koller describes the histories of three women in whom hydrosalpinx developed after a sterilizing intervention. In the first case one tube was treated according to Madlener's method, while the other tube was closed by double crushing and ligation. In the second case the tubes were crushed and ligated at three points. The third case was that of a woman in whom in the course of an operation for extra-uterine pregnancy the other tube was closed by a simple ligature. The author considers the closure of the tubes by an infection or the artificial closure by a ligature the chief cause of the later development of hydrosalpinx. He is unable to say to what extent postoperative circulatory disturbances increase the transudation but points out that the most severe sactosalpinx developed in the tube on which Madlener's operation was done, a method in which crushing and ligation of a larger portion of the tubes will always lead to changes in the circulation. The author also cites a number of animal experiments. On the basis of the observations described here and of a great number of sterilizations, he reaches the conclusion that a sterilizing intervention should be preceded by a control of the temperature, of the number of leukocytes and of the sedimentation speed of the erythrocytes, and that it should not be done unless these tests indicate normal values. Sterilization should not be done until at least eight weeks has passed after a confinement, an abortion or a general disorder. In case of thrombotic disturbances or of genital inflammations, the waiting period should be still longer. Careful peritonization of the region of the wound is necessary. Ligated portions of tissue and those the nutrition of which is impaired should if possible be secured by retroperitoneal burying (prevention of ileus). The sterilization methods should employ as simple a method as possible. The author says that his clinic has used within the last year subperitoneal resection without ligation of the tubes and with subsequent peritoneal suture. He advises that all surgical sterilizations be made at the isthmic portion of the tubes near their connection with the uterus. He thinks that in this manner it will be possible to prevent the formation of a hydrosalpinx or of a later, ascending pyosalpinx. If the operation reveals inflammatory changes of the tubes or if there is a possibility of closure in the ampullar portion and at the abdominal ostium, the total resection of the tubes, eventually with wedge excision from the uterine fundus, is advisable. It is hoped that this will prevent the formation of a hydrosalpinx or of a flare-up of latent infections.

Plural Births.—Steiner says that until a decade ago it was generally assumed that uniovular twins are always covered by one chorion and that twins who have two chorions are always binovular. In recent years, investigations have disclosed that the results of the examination of the placenta do not always tally with the similarity diagnosis. To determine whether discrepancies exist between similarity diagnoses and postpartum observations, the author's institute has collected twin placentas since 1928. The number of chorions and amnions was determined by macroscopic and microscopic studies, and in some cases the placentar circulations were examined by means of contrast injections and stereoroentgenoscopies. The twins were subjected to similarity diagnoses between the sixth and twelfth months and again during later years. The similarity examinations in 100 twins of the same sex and with dichorionic placentas disclosed that twenty-four were uniovular and that seventy-five were binovular. Studies on twenty-nine monochorionic-diaminotic and on three monochorionic-monoaminotic twins disclosed that they were all uniovular. One hundred and thirty-six sets of twins of different sexes had dichorionic placentas. The author observed no monochorionic placentas in twins of different sexes. Double placentas were found in dichorionic uniovular twins just as frequently as in binovular twins and in twins of different sexes. He points out that so far the research on twins has disclosed nothing that would justify a departure from the opinion that monochorionic-diamniotic twins are always uniovular and thus biotypical. The presence of a monochorionic-diamniotic placenta proves that the twins in question are uniovular. Monochorionic-monamniotic twins are most likely uniovular. In order to make the diagnosis "monochorionic-diamniotic placenta" it is necessary, in addition to the macroscopic determination of a simple placenta and of a septum that consists of two membranes, to discover anastomoses between the two placental circulations. A microscopic examination of the septum should be made, because it is the only means of deciding the diagnosis if vascular anastomoses cannot be found. The same rules apply to the examination of the placentas of triplets or of other plural births. Among seven sets of triplets, the author discovered two trichorionic binovular sets. The examined individuals of plural births who had a common chorion were without exception uniovular. The similarity between dichorionic uniovular twins is the same as in case of monochorionic uniovular twins. Dichorionic uniovular twins are true uniovular twins.

Increase in Blood Pressure an Indication of Incretory Disturbances in Myoma.—To clarify the problem of whether the development of myoma is connected with circulatory disturbances that are not the result of loss of blood, Strassmann and Philipp determined the blood pressure values of 500 patients with myoma and compared them with the blood pressure values of 500 patients of the same age groups who had different disorders. They found that low values (under 120 mm. of mercury) were present in 15.4 per cent of the patients with myoma and in 28.6 per cent of the other patients. High blood pressure values (over 140 mm. of mercury) were found in 43.6 per cent of the myoma patients and in 33 per cent of the other patients. These figures are the more noteworthy since they include also the myoma patients in whom severe hemorrhages had depressed the blood pressure values. Of the myoma patients who had a regular menstrual cycle (460 women), 42.16 per cent had values over 140 mm. of mercury, whereas in the regularly menstruating women with the other disorders (387) this percentage was 25. Since the menopause and the menopausal increase in blood pressure appear later in myoma patients than in other women, the comparison of those in both groups, who menstruate regularly, reveals the blood pressure increasing factor of the myoma disorder more clearly than the comparison of corresponding age groups. The authors emphasize that the increase in the blood pressure in the myoma patients is not a direct result of the tumor but that both are coordinate symptoms of a superordinated incretory disturbance, which may be considered a dysfunction of the ovary, the thyroid and the adrenals. This is indicated also by the increased basal metabolic rate, the electrocardiographic aspects and the outcome of Kauffmann's diuresis test in patients with myoma. The authors point out that, although for the gynecologist the local aspects of the uterus are the most important in case of myoma, it should not be overlooked that this is a general disorder, the circulatory and incretory disturbances of which deserve attention. On the other hand, the internist should not fail to search for a myoma in the corresponding disorders of other organs.

Deutsche medizinische Wochenschrift, Leipzig

61: 1663-1710 (Oct. 18) 1935. Partial Index

Experiences with Eugenic Sterilization in Women. G. Haselhorst.—p. 1663.
Inguinal Sterilization According to Menge. P. W. Siegel.—p. 1666.
*Rare Gynecologic Disorders in Children and Young Girls. C. Clauberg.—p. 1668.
Obstetric Anesthesia in Clinic and Private Home. H. Buschbeck.—p. 1670.
*Fertility Vitamin E and Its Therapeutic Significance for Gynecology. E. Gierhake.—p. 1674.

Rare Gynecologic Disorders in Children.—Clauberg says that leukorrhea is the chief disorder for which the gynecologist is consulted in the treatment of children and young girls. The

first thing to be done in these cases is the bacteriologic examination in order to determine whether the vulvovaginitis is of gonorrheal origin. If this is not the case, two factors must be considered which are nearly always responsible for leukorrhea in children and young girls; namely, irritation by foreign bodies and malignant tumors. The author reports the case of a girl, aged 4, in whom a peculiar vaginal tumor existed. Radium proved to be ineffective in the treatment of the highly malignant tumor, and the child died. On the basis of the histologic examination, the tumor must be regarded as an angioendothelioma. The author says that such tumors are much less frequent than irritation by a foreign body and asserts that onanistic practices are more common in small girls than is ordinarily believed. He describes the case of a girl, aged 6, in whom manipulations with a slate pencil were found to be the cause of the leukorrhea, and in a girl, aged 8, small stones and two safety pins were extracted from the vagina. He cites the case of a girl who fell astride an iron bar, on which she tried to balance herself. There was hemorrhage from the vulva but no severe external injury. When the bleeding continued, an intervention became necessary, in the course of which it was found that the vagina had been completely torn off. In the last part of his report the author describes the injuries sustained by a child, aged 2 years and 3 months, who was raped.

Vitamin E.—Gierhake reports his own studies on the so-called fertility vitamin. He made tests on rats and chickens and found that the lack of vitamin E in the diet is followed by sterility, by changes in the instinctive behavior of the animals and by changes in the hairs and feathers, respectively; that is, there is evidence of an incretory disturbance, particularly of the anterior lobe of the hypophysis. Histologic studies on the hypophysis of the animals receiving a diet in which vitamin E was lacking revealed changes similar to those that develop following castration. There are indications that the lack of vitamin E results primarily in an impairment of the gonads, which in turn produces the changes in the hypophysis. Following the method suggested by Evans and Burr, the author succeeded in preparing from the oil of wheat germ a concentrated extract of vitamin E, a few drops of which reestablished fertility in female rats made sterile by a diet lacking in vitamin E. After mentioning the physical and chemical properties of this extract, he discusses its therapeutic application, pointing out that in several countries preparations of vitamin E have been used with good results in human and veterinary medicine. He thinks that treatment with vitamin E is indicated in habitual abortion, in cases in which there is a tendency to premature births, and in all cases of female sterility in which a dietetic insufficiency seems to play a part.

Klinische Wochenschrift, Berlin

14: 1489-1520 (Oct. 19) 1935. Partial Index

Electrocardiographic Studies on Spasmophilic Children. R. Aschenbrenner and P. Bamberger.—p. 1494.
Mechanism of Vitamin C Formation in Lens. H. K. Müller.—p. 1498.
Traumatic Neurogenic Form of Diabetes. W. Kretschmer.—p. 1501.
*Therapy of Essential Thrombopenia During Childhood. E. Schiff.—p. 1504.
Testing of Optokinetic Nystagmus for Detection of Simulated Blindness. K. Bach.—p. 1505.

Therapy of Essential Thrombopenia.—Schiff describes the history of a boy, aged 9, who presented the typical symptoms of essential thrombopenia. The child was given a diet consisting of fresh fruits, vegetables, liver and five egg yolks and 0.15 Gm. of cevitamic acid daily. After a few days of this treatment there was considerable improvement in the bleeding tendency. The bleeding time likewise improved rapidly, although the number of platelets was still comparatively small. Moreover, after about twelve days the capillary resistance had improved considerably and the thrombocytes increased constantly, so that after one month they numbered 200,000 and at the end of four months 413,000. The author raises the question as to what caused this thrombocytosis, the cevitamic acid or the fat-soluble vitamins and provitamins contained in the egg yolks. In order to gain some insight into this problem, he employed a somewhat different treatment in another child with essential thrombopenia, a girl aged 7. The child was treated in the same manner as the boy, except that she received no egg yolks and liver. It is noteworthy that in this child there was a considerable decrease in the number of thrombocytes during the first eight days of treatment. However, in spite of the small number of thrombocytes, the bleeding tendency and the bleeding time improved. After the cevitamic acid was administered intravenously, the number of thrombocytes increased rapidly; but beginning with the twenty-second day of treatment the child received the cevitamic acid only orally. In comparing the two cases, the author points out that in the first child, who received the cevitamic acid only by mouth and, in addition, was given egg yolks, the increase in thrombocytes was more rapid than in the second child, in whom the cevitamic acid was administered by mouth as well as intravenously. The author is as yet unable to decide whether the more rapid increase in the thrombocytes of the first child was the result of the egg yolks or whether individual differences in the two patients are responsible for the different results. These two cases indicate also that there is no parallelism between the bleeding time and the number of thrombocytes.

14: 1521-1560 (Oct. 26) 1935. Partial Index

Posterior Lobe of Hypophysis in Hypertension. A. Gómez Marcano.—p. 1525.
Adrenals in Hypertension. W. von Lucadou.—p. 1529.
Biologic Significance of Phosphate Ester of Erythrocytes. E. Freudenberg.—p. 1530.
*Experimental Foundations of Percutaneous Insulin Action. S. Hermann and H. Kassowitz.—p. 1531.
*Clinical Observations on Percutaneous Action of Insulin in Diabetic Patients. H. Přibram.—p. 1534.
*Hemostatic Action of Pectins, Particularly in Hemophilia. G. Suck.—p. 1536.
Experiences with Henry's Malaria Reaction in Inoculation Malaria. R. Brandt and L. Horn.—p. 1538.

Experiments on Percutaneous Insulin Action.—Hermann and Kassowitz demonstrate in experiments on animals that insulin in the form of a suitable ointment is not only absorbed by the skin but can be applied in measurable doses so as to produce repeatedly the same effects. They determined that the skin absorbs insulin in two ways, which, for the sake of clearness, are designated as "vertical" and "horizontal." In reality the percutaneous insulin action consists of two components; the one designated as the "vertical" produces a reduction in the blood sugar as in case of subcutaneous injection, whereas the "horizontal" results in a slower but also a more protracted insulin action. The authors observed that, to realize the full insulin action, it is necessary to remove the fat and cholesterol from the skin and to alkalize, or at least neutralize, the skin, because the free organic acids that exist in the skin or in the sweat of omnivorous animals prevent the percutaneous insulin action. Theoretical reasoning seems to justify the hypothesis that a part of the percutaneously applied insulin is absorbed by the lymph, whereas the other part goes by the shortest route to the musculature.

Percutaneous Action of Insulin in Diabetic Patients.—Přibram points out that the experiments of Hermann and Kassowitz demonstrated that an insulin ointment applied under the proper conditions to the skin of rabbits and dogs is capable of reducing the blood sugar. This induced him to make experiments on healthy persons and on diabetic patients. Tests on healthy persons revealed that insulin rubbed into the skin is absorbed and produces a reduction of the blood sugar. He tried the percutaneous insulin administration on more than twenty patients with diabetes mellitus. The observations made in these patients are summarized as follows: 1. Insulin applied to the skin reduces the blood sugar content. 2. The quantity of insulin required for percutaneous administration is much greater than that required for subcutaneous administration (five times as much). 3. The amount of insulin required generally varies between 50 and 300 units. 4. The skin should be cleansed and the ointment applied according to the method of Hermann and Kassowitz. The sites of application are alternately the regions of the biceps and of the anterior portions of the thighs. 5. The immediate effect of the percutaneously administered insulin is small, and short tests generally prove ineffective; however, if the inunction is done with persistence, favorable results can be obtained in many cases. The author concedes that percutaneous insulin treatment is unsuited for severe cases of diabetes mellitus.

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Although the large insulin doses make the inunction method rather expensive, the method has the advantage that it effects a more protracted action, and, since sudden and severe reductions in the blood sugar do not have to be feared with this method of application, it would seem advisable for diabetic patients who have circulatory disturbances. The author describes several cases in which he employed the treatment. The first case demonstrates that if the same dose is adhered to the efficacy of the insulin inunction increases gradually.

Hemostatic Action of Pectins.—Sack describes his experiences with a solution of apple pectin. He administers this solution either by injection in the form of a sterile 1.5 per cent solution or by mouth in the form of a 5 per cent solution. Depending on the severity of the hemorrhage, he administers from 20 to 80 cc., partly by subcutaneous injection and partly by intragluteal injection, the latter being the most effective. As soon as the coagulation time had been reduced, the patient was given four times daily 10 cc. of the pectin solution by mouth. The author employed the pectin treatment in thirty-two cases: ten gastric hemorrhages, seven pulmonary hemorrhages, three renal and vesical hemorrhages, two intestinal hemorrhages, six other cases (nasal and dental hemorrhages and so on), one patient with icterus and three patients with hemophilia. All these cases, some of which were rather severe, responded promptly to the treatment. The author describes some of the histories, particularly those of the hemophilic patients. It was always possible to reduce the abnormally high coagulation time to normal values. The pectin solution proved its hemostatic value also when locally applied, and its administration never produced undesirable effects.

Münchener medizinische Wochenschrift, Munich

82: 1709-1748 (Oct. 25) 1935. Partial Index

Digitalization Before Surgical Interventions. T. Altenkamp.—p. 1709.
Sterilization of Catgut. Linhart.—p. 1711.
*Serodiagnosis of Scarlet Fever. E. Weichherz.—p. 1712.
*Treatment of Epidemic Parotitis. K. Oxenius.—p. 1714.
*Treatment of Hemorrhoids. T. Sutter.—p. 1715.
Roentgen Irradiation of Tonsils. H. Loebell.—p. 1715.

Serodiagnosis of Scarlet Fever.—The serodiagnosis of scarlet fever suggested by Weichherz employs substrates (antigen and antibodies, respectively) from the blood of scarlet fever patients. He prepared one from the blood serum of a patient who had had scarlet fever for four days, the other from the blood serum of a scarlet fever convalescent. He used the globulin fraction as antibody substrate and the albumin fraction as antigen substrate. The serums to be tested were incubated with these two substrates and then treated further according to the method used by Fuchs in the diagnosis of cancer. The author employed this test in seventy cases of scarlet fever and obtained correct results in sixty-eight. The reaction was always negative in measles, varicella and medicinal exanthems. These promising results induced the author to make this brief preliminary report, which is to be followed later by a more detailed one.

Treatment of Epidemic Parotitis.—Oxenius considers prolonged rest in bed (two weeks) unnecessary in the treatment of epidemic parotitis, but he admits that several days' rest in bed might be advisable for the prevention of complications. In reviewing the measures that most therapeutic textbooks recommend for the treatment of parotitis, he expresses the opinion that oral irrigations with hydrogen peroxide are inadvisable. Instead he advises, particularly for children, gargling and oral irrigations with a mild tea of peppermint, sage or camomile, pointing out that these teas are much more pleasant in that they do not produce the deadened feeling in the oral mucous membrane that is produced by hydrogen peroxide. Moreover, he suggests that the sucking of medicated tablets is likewise helpful. In view of the favorable result obtained with antiphlogistic cataplasms in the treatment of inflammations of the lymph nodes, the author decided to use these cataplasms in the case of epidemic parotitis and obtained good results. These cataplasms require only one change in twenty-four hours and were well liked by the patients.

Treatment of Hemorrhoids.—Sutter shows that the withdrawal of the blood from the nodules and their surroundings is highly important in the treatment of hemorrhoids. In order to effect this, two factors are important: (1) emptying of the veins by muscular activity of the legs and (2) the diversion of the blood into other parts of the body. The author shows that both of these factors are accomplished by swimming, but that mere bathing is ineffective. He describes three cases in which swimming proved helpful in the treatment of hemorrhoids.

Wiener klinische Wochenschrift, Vienna

48: 1311-1342 (Oct. 25) 1935. Partial Index.

Thirty Years of Liver Pathology. H. Eppinger.—p. 1313.
*Clinical Value of Bendien's Reaction for Diagnosis of Cancer. F. Hogenauer and Thilde Gröbl.—p. 1320.
Point of Attack of Thyroxine. B. von Issekutz.—p. 1325.
Present Opinions on Etiology of Essential Hypertension. E. Kylin.—p. 1330.

Bendien's Reaction for Diagnosis of Cancer.—Hogenauer and Gröbl review the technic of Bendien's test and the results obtained by other investigators. Then they describe their own experiences with the test on 116 cancer patients and 143 control cases. They obtained positive results in 103 of the cancer patients. However, they also obtained positive results in sixty-nine of the control cases. They conclude from this that the positive outcome of Bendien's test does not justify the diagnosis of cancer. The negative outcome of the test, together with other factors that militate against cancer, however, may eventually corroborate the absence of cancer. Bendien's reaction is of but slight value for the clinical diagnosis of cancer.

Zentralblatt für Gynäkologie, Leipzig

59: 2465-2528 (Oct. 19) 1935. Partial Index

Simple Procedure for Sterilization of Women. G. Haselhorst.—p. 2466.
Choice of Method for Surgical Sterilization of Women. C. Holtermann.—p. 2472.
*Treatment of Retarded Births. R. Berg.—p. 2483.
*Two New Methods of Ventrosuspension by Cutting of Round Ligaments. R. Milner.—p. 2484.

Treatment of Retarded Births.—Berg says that the same reasoning which led to the administration of belladonna during the period of dilatation induced him to try methyloctenylamine, a spasmolytic preparation. He found that the injection of 1 cc. of this preparation was highly effective in overcoming the rigidity of the uterine os. During the period of expulsion he obtained favorable results with the combined subcutaneous injection of 1 cc. of the same preparation and with from 1.5 to 3 Voegtlin units of posterior pituitary. He found that this combination had a better effect than posterior pituitary alone. He gained the impression that spasmolytic preparation has the effect of an activator. He maintains that with this treatment the period of expulsion is shortened without detrimental effects.

Ventrosuspension by Cutting of Round Ligaments.—Milner says that in case of prolapse of the vagina and the uterus, the methods employed hitherto for ventrifixation did not obviate the danger of ileus. He achieves mobile anterior fixation of the uterus by cutting the round ligaments. For cases in which the round ligaments are so short that they cannot be pulled through the anterior abdominal wall or for those in which attachment to the anterior fascia (the posterior one being usually too weak) was made impossible by this shortness, the author devised what he considers a new way of ventrosuspension. He cuts the round ligaments as far laterally from the uterus as possible, separates them from the broad ligaments, sutures the slits into the broad ligaments, covers the round ligaments with peritoneum and then pulls them through the anterior abdominal wall according to Gilliam's method. The author employed this method also in a case in which the round ligaments were not too short but too thin. He says that whether the fascia of the abdominal wall is divided in the longitudinal or the transverse direction depends on the individual case. It is important that the round ligaments are not crushed with a clamp in that portion with which they are to be attached. The pulling through of the simple round ligament, instead of a loop, has the advantage that the opening may be smaller. This smallness is of importance for the prevention of hernias and of prolapse of the omentum. If his technic is used, suturing of the lateral portion of the round ligament is unnecessary. The use of the cut ligaments gives greater freedom as far as tightness and height of the attachment are concerned, especially in the rather frequent cases in which

chiefly the uterus is prolapsed. This method permits also a restriction of the operations that constrict the vagina. The intervention is possible in two ways: transperitoneal or subperitoneal. In the latter case there is no danger of ileus, whereas in the former it exists only as far as the lateral clefts between anterior abdominal wall and round ligaments are concerned. The other threat of ileus in transperitoneal attachment can readily be prevented by peritoneal sutures.

Sovetskaya Vrachebnaya Gazeta, Leningrad

Sept. 15 (No. 17) pp. 1321-1400 1935. Partial Index

Obscure Infections and Their Significance in Infections of Children. M. G. Danilevich.—p. 1330.
*Symptomatology of Pernicious Anemia. S. I. Sherman.—p. 1339.
Oxygenated Bath Therapy of Insomnia. I. S. Vainberg.—p. 1348.
Foreign Bodies in Intestine. N. Ya. Gandelman.—p. 1361.
Buffer Capacity of Morphologic Elements of the Blood. B. M. Chuistov.—p. 1364.

Pernicious Anemia.—Sherman studied seventy-six cases of pernicious anemia. He concludes that the most characteristic features of the blood picture in the acute stage of the disease is the presence of megalocytes and a pronounced polysegmentation of the neutrophils. Other characteristics, such as acute anemia with a high color index, leukopenia, neutropenia, lymphocytosis, monopenia, aneosinophilia, eosinopenia and thrombopenia, are seen as well in hyperchromic anemias of types other than the Biermer-Erlich type. Patients with pernicious anemia show pronounced alterations in the functions of the small and large intestines, manifested as a rule by the presence of a fermenting, putrid colitis (92 per cent). Of these, 84 per cent had an enterocolitis. Study of feces on Schmidt's diet demonstrated lack of utilization of fats in 92 per cent and lack of digestion of muscle fibers in 70 per cent. The ferment function of the pancreas was decreased in half of the studied cases. In the majority of the cases faulty carbohydrate metabolism was present. This was manifested by a low blood sugar on fasting, a high glycemic coefficient on administration of sugar, and failure to return to normal figures two hours after the beginning of the sugar tolerance test. The author emphasizes the diagnostic importance of glossitis as an early symptom. This was present in 90 per cent of the cases. Subjective neurologic and vascular symptoms play an important part in the clinical picture of pernicious anemia.

Acta Medica Scandinavica, Stockholm

86: 127-454 (Oct. 29) 1935. Partial Index

*Sarcoid of Boeck, a Disease of Importance to Internal Medicine: Report of Four Cases. H. A. Salvesen.—p. 127.
Resorption and Oxidation of Alcohol in Alcohol Addicts. C. G. Bernhard and L. Goldberg.—p. 152.
Effect of Salyrgan, Theophylline and Caffeine on Diuresis, Glomerular Filtration and Proteinuria. H. Berglund and B. Sundh.—p. 216.
Xanthoproteic Reaction in Blood as Test of Renal Function. H. Rasmussen.—p. 302.
*Aspects of Latent Edema Tendency in Tonsillar Angina. A. Kristenson.—p. 315.
*Genesis of Oval Erythrocytes. H. Schartum-Hansen.—p. 348.
*Observations on Insulin-Epinephrine Treatment by Clausen Method. T. T. Andersen.—p. 361.

Sarcoid of Boeck.—Salvesen emphasizes that the sarcoid of Boeck is of interest to the internist because it is not merely a skin disease but, like Hodgkin's disease, may involve the entire organism. It is a systemic disease with especial preference for the lymphatic system. The author describes the histories of four patients, one man and three women, ranging in age from 38 to 56 years. Two of the patients presented symptoms that had not been described in Boeck's sarcoid. One of the women suffered from a contracted kidney with peculiar clinical aspects. Besides skin sarcoids and pulmonary lesions of the usual type, she had low blood pressure and neuritis of the optic nerves. Another woman, aged 38, had a heart lesion with right bundle branch block of an unstable type, partly dependent on the heart rate. The author reproduces a number of electrocardiograms. One of them, taken under the influence of amyl nitrite, shows transition from normal conduction to block and from block to normal again. The man had glandular tumors, iridocyclitis, enlarged spleen and extensive pulmonary infiltration for three years before the skin sarcoid appeared. In the three patients examined for it there was a considerable increase in the serum protein, owing to a greater amount of globulin.

Latent Edema in Tonsillar Angina.—Kristenson is convinced that infections involve always a toxic impairment of the body tissues. One of the most frequent functional disorders resulting from the toxic action of infections is a cardiovascular disturbance. The cardiac action and the peripheral circulation are impaired. Manifestations of the latter disturbance are changes in the fluid exchange between the blood and tissues. The volume of the involved portion of the body enlarges to the extent to which the disturbance in the fluid exchange between blood and tissues increases the fluid content of the tissues. This increase in volume can be measured by different methods. The author describes the method that he employed first on normal persons, then on patients with mild infections and finally on patients with tonsillar angina. In healthy persons fifteen minutes of standing increased the volume of the leg by from 0.6 to 2.5 per cent. This increase disappeared within thirty minutes after the horizontal position had been assumed. In persons with infections of the upper air passages, particularly in those with tonsillar angina, the course of the test was different; either the increase in volume was greater than in normal persons or it did not disappear with the normal rapidity when the horizontal position was assumed. The author concludes from this that the existing infection produces a tissue impairment with functional disturbance of the fluid exchange between the blood and the tissues.

Genesis of Oval Erythrocytes.—After remarks about the occurrence of oval erythrocytes in various species of animals, Schartum-Hansen points out that in human subjects they appear during pernicious anemia in the form of macro-ovalocytes and usually disappear after successful liver therapy. However, the literature also reports cases of healthy persons in whom comparatively high percentages of oval erythrocytes were observed. Recently the author observed a woman, aged 50, who was hospitalized on account of chronic rheumatism. Examination of the blood revealed 67 per cent hemoglobin and 4.02 million erythrocytes. Closer inspection of the erythrocytes after staining with May-Grünewald-Giemsa demonstrated that the majority of the erythrocytes were oval, some of them of small elliptic shape. Repeated examinations of the blood always revealed the same oval erythrocytes amounting to approximately 90 per cent of the total number. In order to determine during what stage of the erythropoiesis the oval form developed, a sternal puncture was made which disclosed entirely normal conditions; that is, the erythroblasts and erythrocytes were all round. This indicates that the oval form does not develop until after karyorrhexis has taken place. Studies on the reticulocytes revealed that the transformation into ovalocytes takes place during or immediately after the reticular stage of the erythrocytes. In order to determine whether ovalocytosis is hereditary, the blood of three of the seven children of the woman was examined. Two girls had only round erythrocytes, whereas a boy, aged 14, had some oval erythrocytes. To be sure, in him the ovalocytosis was not as pronounced as in his mother. Nevertheless, his case indicates that ovalocytosis may be hereditary. Studies of the form of erythrocytes of normal and anemic persons disclosed that ovalocytes (disregarding megalocytes) occur regularly and amount to from 1 to 20 per thousand of the erythrocytes. The number of the ovalocytes seems to increase slightly with age and with the degree of anemia. The author assumes that the ovalocytes might represent the final stage, "the stage of destruction," of all erythrocytes and that the cause of ovalocytosis may be an endocrine factor.

Observations on Insulin-Epinephrine Treatment.—The favorable results obtained by Clausen with the combined administration of insulin and epinephrine induced Andersen to try this method. The amount of epinephrine added was 0.1 mg. to 5 cc. of insulin. This addition of epinephrine caused no local reactions. Andersen employed this treatment in seventeen cases. None of these patients showed detrimental effects. Those in whom the insulin treatment alone had produced hypoglycemic symptoms were entirely free from them after the epinephrine had been added. The author considers this form of treatment especially useful in diabetic patients with a tendency to hypoglycemic reactions.